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THE ARCTIC: A WAIT AND SEE APPROACH TO DEFENDING THE HOMELAND

by

William Hegedusich

December 2017

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13. ABSTRACT (maximum 200 words)

When it comes to the Arctic, there is no lack of planning, debating, studying, or shortage of opinions as to what the U.S. should or should not do in this region of extremes. Should the United States spend billions on icebreakers that when completed may not have ice to break, ignore the region and hope the rest of the world follows suit, or worse, militarize the region for an unknown future threat?

Given the budget-constrained environment and lack of threat to the U.S. national security from the Arctic, is there another option or method to allow policy makers to envision a different future for the Arctic, one requiring them to wait and do nothing, knowing with some certainty that taking no action is the right decision at this moment in time?

Using scenario planning, this thesis examines four future scenarios for the Arctic and evaluates the strategic patience and persistence strategy introduced in the 2015 National Security Strategy to understand better the costs, risks, and benefits of doing little or nothing in the Arctic. Given the uncertainties in the Arctic and faced with greater threats to the homeland, the strategic patience and persistence strategy is a viable approach to pursue in the Arctic, which allows the U.S. to achieve its national Arctic goals.

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THE ARCTIC: A WAIT AND SEE APPROACH TO DEFENDING THE HOMELAND

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requirements for the degree of

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ABSTRACT

When it comes to the Arctic, there is no lack of planning, debating, studying, or shortage of opinions as to what the U.S. should or should not do in this region of extremes. Should the United States spend billions on icebreakers that when completed may not have ice to break, ignore the region and hope the rest of the world follows suit, or worse, militarize the region for an unknown future threat?

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LIST OF ACRONYMS AND ABBREVIATIONS

9/11	September 11, 2001
AESC	Arctic Executive Steering Committee
AMAP	Arctic Monitoring and Assessment Programme
CIA	Central Intelligence Agency
CIA	Cross-Impact Analysis
COA	Course of Action
DOD	Department of Defense
E&P	Exploration and Production
EEZ	Exclusive Economic Zone
EU	European Union
GAO	General Accounting Office
HSPD	Homeland Security Presidential Directive
ICJ	International Court of Justice
IMO	International Maritime Organization
LOE	Line of Effort
LOEs	Lines of Effort
M&S	Modeling and Simulation
NATO	North Atlantic Treaty Organization
NORAD	North American Aerospace Defense Command
NSC	National Security Council
NSPD	National Security Presidential Directive
NSR	Northern Sea Route
NWP	Northwest Passage
OPEC	Organization of the Petroleum Exporting Countries
PDD	Presidential Decision Directive
PMT	Probabilistic Modified Trends
RADM	Rear Admiral
SWOT	Strengths, Weaknesses, Opportunities and Threats
TIA	Trend-Impact Analysis
TSR	Transpolar Sea Route

UNCLOS	United Nations Convention on the Law of the Sea
USC	United States Code
USCG	United States Coast Guard
USS	United States Ship
USGS	United States Geological Survey
USNORTHCOM	U.S. Northern Command

EXECUTIVE SUMMARY

In 1859, Russia offered to sell Alaska to the United States, hoping it would balance the power in the Pacific between them and Great Britain, and strengthen their relationship with the United States and bring about a "desirous of strengthening, if possible, the good understanding which exists between" the United States and Russia.[1] However, the Civil War prevented the United States from purchasing Alaska. The end of the Civil War brought a renewed interest in Alaska by then–Secretary of State William Seward. He negotiated the purchase and the United States took possession of Alaska in October 1867, and in 1959, Alaska became the 49th state. From 1867 until today, Alaska and more broadly the Arctic has been in and out of the news. Today, the Arctic is back in the news, but not for geopolitical reasons or the discovery of gold, oil, or other natural resources. Rather, the melting of the polar ice cap combined with an increased rate of melting drives what is taking place in the Arctic today.[2]

When it comes to the Arctic, there is no lack of planning, debating, studying, or shortage of opinions as to what the U.S. should or should not do. The Arctic is increasingly becoming a homeland security issue because previously inaccessible areas are now accessible for exploration of natural resources, tourism, quicker shipping routes,

[1] Digital History, "Alaska Treaty," accessed November 13, 2017, http://www.digitalhistory.uh.edu/disp_textbook.cfm?smtID=3&psid=4019.

[2] *2017 Snow, Water, Ice and Permafrost in the Arctic (SWIPA): Summary for Policy-makers,* Arctic Monitoring and Assessment Programme (AMAP), Oslo, Norway; Fourth National Climate Assessment, Volume I [Wuebbles, D.J., D.W. Fahey, K.A. Hibbard, D.J. Dokken, B.C. Stewart, and T.K. Maycock (eds.)], U.S. Global Change Research Program, Washington, DC, 303, doi: 10.7930/J00863GK.

and to non–blue water navies.[3] The Arctic today "could become the source of cooperation that Seward foresaw."[4]

What strategy should the United States pursue in the Arctic? This thesis sets out to answer this by assessing the costs, risks, and benefits of applying the strategic patience and persistence strategy for the Arctic. The 2015 *National Security Strategy* introduced this as an alternative to spending billions to upgrade communication systems, improve infrastructure and domain awareness, train and equip forces, and build Arctic-specific capabilities (e.g., polar-capable icebreaker).[5]

From a policy perspective, the Arctic is guided by several national policies: 2009 *National Security Presidential Directive 66/Homeland Security Presidential Directive 25* (NSPD 66/HSPD 25), 2015 *National Security Strategy,* 2013 *National Strategy for the Arctic Region* and the 2016 *Implementation Framework for the National Strategy for the Arctic Region.* Collectively, these policies, described as a "wish list," lack direction, funding, or authority.[6] I distilled from these three national strategic goals for the Arctic to assess the effectiveness of the strategic patience and persistence strategy. The three national strategic goals for the Arctic are 1) protect national security interests, 2) protect the homeland, and 3) ensure freedom of the seas.

The thesis uses a modified "double uncertainty" matrix, also known as the "2x2 matrix approach," using scenarios representing four possible futures that I will use to

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[3] United States Geological Survey, Energy Resource Program, Circum-Arctic Resource Appraisal, http://energy.usgs.gov/RegionalStudies/Arctic.aspx.; Crystal Cruises, Northwest Passage, http://www.crystalcruises.com/voyage-finder/cruise-type/Region/northwest_passage.; Scott Borgerson, "Arctic Meltdown: The Economic and Security Implications of Global Warming," Foreign Affairs, March/April 2008, https://www.foreignaffairs.com/articles/arctic-antarctic/2008-03-02/arctic-meltdown.; Andrea Charron, "Canada, the Arctic, and NORAD: Status quo or new ball game?," *International Journal*, Vol. 70(2), (2015), 215-231; Blue water navies are those maritime forces that can operate globally, e.g. China, France, Italy, India, Russia, United Kingdom and the United States

[4] Scott G. Borgensen, "The Coming Arctic Boom: As the Ice Melts, the Region Heats Up," *Foreign Affairs,* July/August 2013, accessed November 2, 2017, https://www.foreignaffairs.com/articles/global-commons/2013-06-11/coming-arctic-boom.

[5] The White House, "National Security Strategy," February 2015, Washington, DC.

[6] William G. Dwyer, "The Evolving Arctic: Current State Of U.S. Arctic Policy," (master's thesis, Naval Postgraduate School, 2013), 17.

evaluate the strategic patience and persistence strategy.[7] These scenarios incorporate the most important factor, Russia, with the most uncertain factor, the rate of melting ice in the Arctic. The titles for the four scenarios are New Spice Route, Arctic Renaissance, Sochi Agreement, and Arctic Russian Bear. The New Spice Route explores new trade routes through the Arctic. The Arctic Renaissance brings the Arctic out of the Ice Age into the 21st century. The Sochi Agreement is Russia's second attempt at unifying nations around its strategic goals as attempted under the Warsaw Pact. Finally, the Arctic Russian Bear involves Russia flexing its military might to control the Arctic. The scenarios present policymakers four alternative futures where Russia's actions either hold the Arctic region or world at risk (adversary role) or Russia aligns itself with other nations though various partnerships (partner role). At the same, I assess the impact the melting sea ice has on their and other nations' actions.

Strategies come in all shapes and sizes and across many disciplines. Military strategies include air superiority, blitzkrieg, flanking maneuvers and others. In business, typical strategies involve firms dominating their industry, monopolizing critical resources or out-innovating their competitors. According to Richard Rumelt in *Good Strategy Bad Strategy: The Difference and Why It Matters,* a good strategy recognizes the challenges, provides a way ahead, and typically has a "kernel" consisting of three elements: a diagnosis, guiding policy, and coherent action.[8] Depending on whom you are, the strategic patience and persistence strategy may convey some or all of the following: a failure by leadership to define a hard and fast strategy; a willingness for flexibility and efficiency; acknowledgment of the unknown unknowns; or making a small investment now in hope of a greater return later. All of these have an eye toward keeping the nation's powder dry until needed.

With the scenarios and strategies in hand, I evaluate the costs, risks, and benefits of the United States pursuing the strategic patience and persistence strategy on its ability to protect its national security interests and the homeland and ensure freedom of the seas.

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[7] Muhammad Agar, Tugrul U. Daim and Anotnie Jetter, "A review of scenario planning," *Futures* 46(2013): 34, https://doi.org/10.1016/j.futures.2012.10.003.

[8] Richard P. Rumelt, *Good Strategy Bad Strategy: the Difference and Why It Matters* (Crown Business, 2011), loc 188 and 241 of 5141, Kindle.

In three of four scenarios, this strategy has acceptable risks; the fourth scenario entails the greatest risk and requires some action by the U.S.

Today, the West views the melting Arctic sea ice with one eye on its risks and the other on its rewards. The risks entail impacts to the environment, indigenous people, and the climate. The rewards are quicker shipping routes, new areas for offshore oil, gas, and natural resource development, tourism, and more. Russia sees this as an opportunity to pivot away from Central Asia where it lost its foothold with the fall of the Iron Curtain and pursue a new course in the Arctic centered on four factors: foreign policy, military security, economic development, and transportation and maritime policy.[9]

Scientists with a very high level of confidence predict "an Arctic-wide ice loss is expected to continue through the 21st century, very likely (>90%) resulting in nearly sea ice-free late summers by the 2040s."[10] Meanwhile, others are calling on the United States Coast Guard to buy four heavy icebreakers, with an average cost of $791 million and lifetime costs in excess of $6.5 billion, in lieu of three heavy and three medium icebreakers in the midst of a constrained budget environment.[11]

While the Arctic may remain an area of little conflict or of homeland security concern for policymakers, the methods used in this thesis could assist them in evaluating future policy decisions as scenarios take an outside-in look at the future. Scenarios explore the problem space versus trying to predict it, and more importantly, they embrace the uncertainty of the future rather than dismissing it. Given these and other uncertainties, the strategic patience and persistence strategy is a viable approach to pursue in the Arctic, which allows the U.S. to achieve its national Arctic goals.

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[9] Caitlyn L. Antrim, "The Russian Arctic in the Twenty-First Century," in *Arctic Security in an Age of Climate Change*, ed. James Kraska, (Cambridge: Cambridge University Press, 2011), 120-124.

[10] Taylor, P.C., W. Maslowski, J. Perlwitz, and D.J. Wuebbles, 2017: *Arctic Changes and their Effects on Alaska and the Rest of the United States*, 303; "Very high level of confidence" is defined as "Strong evidence (established theory, multiple sources, consistent results, well documented and accepted methods, etc.), high consensus."

[11] Ben Werner, "Report: Coast Guard Should Focus on Buying Heavy Icebreakers," *USNI News,* November 20, 2017, accessed November 25, 2017, https://news.usni.org/2017/11/20/report-coast-guard-focus-heavy-icebreakers; National Academy of Science, *Acquisition and Operation of Polar Icebreakers: Fulfilling the Nation's Needs* (Washington, DC: The National Academy Press, 2017), DOI 10.17226/24834.

ACKNOWLEDGMENTS

I joked with folks that the reason the Air Force assigned me to Alaska in 1998 was because North Dakota was not cold enough for me. Beneath the northern lights and among the Arctic Foxes on Shemya, lies the barren beauty that is Alaska where folks go to work until the mercury drops to minus 50º F, and I was happy when a mail-order catalogue package arrived at my house in North Pole, Alaska.

To my parents—thank you for instilling in me a love of God, country and family. To my dad who passed away in the midst of writing this, I will always remember our salmon fishing trip to Talkeetna and the big smile on your face as you caught fish after fish, releasing those after you got your quota.

To my NORAD and USNORTHCOM colleagues—thanks for selecting me and allowing me to represent our two great commands at NPS and CHDS. This has been a wonderful experience made possible by my WO coworkers covering meetings, conferences and other events as I attended the numerous IRs.

To the CHDS faculty and staff—thank-you for preparing America's next generation of Homeland Security experts. Nick and Erik, your guidance and direction kept me focused on my topic, reminding me that nothing is obvious and leaving the rabbit holes for someone else to explore.

To my wife, Mary—thanks for your patience, understanding and love. More times than not, my school schedule and assignments conflicted with family outings, our date nights, and other events.

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I. INTRODUCTION

In 1859, Russia offered to sell Alaska to the United States hoping it would balance the power in the Pacific between Russia and Great Britain. However, the Civil War prevented the United States from purchasing Alaska. The end of the U.S. Civil War brought a renewed interest in Alaska by then Secretary of State William Seward who was "desirous of strengthening, if possible, the good understanding which exists between" the United States and Russia.[1] He negotiated the purchase and the United States took possession of Alaska in October 1867.

For the next thirty years the U.S. government all but ignored Alaska, so much so, the purchase was dubbed "Seward's Folly," until gold was discovered in 1896. Alaska's strategic importance would again go into hibernation until World War II during the Battle of the Aleutians, and in 1959, Alaska became the 49th state.[2]

Alaska was put on the map in 1967 with the discovery of oil in Prudhoe Bay and with it came a construction boom building the Alaskan pipeline and infrastructure to support the oil industry.[3] As happened before, interest in Alaska and more broadly the Arctic waned. It was not until 2010 when former President Obama included a sentence on "Arctic Interest" in the 2010 *National Security Strategy* making the Arctic part of the Nation's strategic policy.[4] Prior to this, the Arctic and Antarctica policies resided in one policy document.[5]

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[1] Digital History, "Alaska Treaty," accessed November 13, 2017, http://www.digitalhistory.uh.edu/disp_textbook.cfm?smtID=3&psid=4019.

[2] United States Department of State. Office of the Historian, "Milestones: 1866-1898, Purchase of Alaska, 1867," November 17, 2016, https://history.state.gov/milestones/1866-1898/alaska-purchase.

[3] Alaskan Oil Production 1959-2010, accessed October 31, 2007, http://www.tax.alaska.gov/sourcesbook/AlaskaProduction.pdf.; Alaska Humanities Forum: Alaska History & Cultural Studies, "Modern Alaska – Oil Discovery and Development in Alaska," November 17, 2016, http://www.akhistorycourse.org/modern-alaska/oil-discovery-and-development-in-alaska.

[4] The White House, "National Security Strategy," May 2010, Washington, DC, 50.

[5] The White House, Presidential Decision Directive/NSC-26, "United States Policy on the Arctic and Antarctic," June 9, 1994.

Today, the Arctic is back in the news, not for geopolitical reasons or the discovery of gold, oil, or other natural resource. Rather, the relatively recent melting of the polar ice cap, first identified in the 1970s and 1980s, and the increase rate of melting drives what is taking place in the Arctic today. From 2011 to 2017, forecasts for a "nearly sea ice-free late summer" went from occurring in 2050 to the 2040s to possibly the late 2030s.[6] The Arctic is increasingly becoming a homeland security issue because previously inaccessible areas are now accessible for exploration of natural resources, tourism, quicker shipping routes, and to non-blue water navies.[7] The Arctic today "could become the source of cooperation that Seward foresaw."[8]

A. PROBLEM SPACE

1. Background

When it comes to the Arctic, there is "no failure to plan," especially for Washington which equates evaluating, studying, and debating the Arctic's strategic role, year after year, "as equivalent to taking decisions on a future course of action."[9] The

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[6] Arctic Monitoring and Assessment Program (AMAP), *2011 Snow, Water, Ice and Permafrost in the Arctic (SWIPA): Climate Change and the Cryosphere*, Arctic Monitoring and Assessment Programme (AMAP), Oslo, Norway, viii; Taylor, P.C., W. Maslowski, J. Perlwitz, and D.J. Wuebbles, 2017: *Arctic Changes and their Effects on Alaska and the Rest of the United States,* In: Climate Science Special Report: Fourth National Climate Assessment, Volume I [Wuebbles, D.J., D.W. Fahey, K.A. Hibbard, D.J. Dokken, B.C. Stewart, and T.K. Maycock (eds.)], U.S. Global Change Research Program, Washington, DC, 303, doi: 10.7930/J00863GK; Arctic Monitoring and Assessment Program (AMAP), *2017 Snow, Water, Ice and Permafrost in the Arctic (SWIPA): Summary for Policy-makers,* Arctic Monitoring and Assessment Programme (AMAP), Oslo, Norway, 5; National Snow and Ice Data Center, "Climate Change in the Arctic," https://nsidc.org/cryosphere/arctic-meteorology/climate_change.html

[7] United States Geological Survey, Energy Resource Program, Circum-Arctic Resource Appraisal, http://energy.usgs.gov/RegionalStudies/Arctic.aspx.; Crystal Cruises, Northwest Passage, http://www.crystalcruises.com/voyage-finder/cruise-type/Region/northwest_passage.; Scott Borgerson, "Arctic Meltdown: The Economic and Security Implications of Global Warming," Foreign Affairs, March/April 2008, https://www.foreignaffairs.com/articles/arctic-antarctic/2008-03-02/arctic-meltdown.; Andrea Charron, "Canada, the Arctic, and NORAD: Status quo or new ball game?," *International Journal*, Vol. 70(2), (2015), 215-231; Blue water navies are those maritime forces that can operate globally, e.g. China, France, Italy, India, Russia, United Kingdom and the United States.

[8] Scott G. Borgensen, "The Coming Arctic Boom: As the Ice Melts, the Region Heats Up," *Foreign Affairs,* July/August 2013, accessed November 2, 2017, https://www.foreignaffairs.com/articles/global-commons/2013-06-11/coming-arctic-boom.

[9] Opening comments by Representative John Garamendi (CA-3) at the July 12, 2016 Committee on Transportation and Infrastructure, accessed January 14, 2017, 16:08, https://youtu.be/WjJz_rZErsE; Heather Conley, *A New Security Architecture for the Arctic, An American Perspective*, (Washington, D.C.: Center for Strategic and International Studies, 2012), 18.

Nation's policies and implementation plans start from the White House and include a dozen Federal Departments and Agencies, numerous Federal interagency committees and state level agencies.[10] Critics of the latest Arctic strategies, 2015 *National Security Strategy* and 2013 *National Strategy for the Arctic Region,* call it a list of challenges with no priorities, no "future capability needs," and no budgetary plan.[11]

What defines the Arctic region depends on whom you ask. Generally, scientists and aviators define the Arctic as the area north of the Arctic Circle (66° 34' N). Ecologists define it as the area north of the tree line with frozen ground and sparse vegetation. Climatologists use the 10º Isotherm line, where the average summer temperature does not go above 10º C (50º F). Anthropologists define it by the societies that have adapted to the Arctic.[12] The Arctic Monitoring and Assessment Programme (AMAP), one of the six working groups of the Arctic Council, has a broader definition: "the terrestrial and marine areas north of the Arctic Circle (66°32' N), and north of 62° N in Asia and 60° N in North America, modified to include the marine areas north of the Aleutian chain, Hudson Bay, and parts of the North Atlantic Ocean including the Labrador Sea."[13] Lastly, the U. S. government defines the Arctic in 15 USC § 4111 as:

> All United States and foreign territory north of the Arctic Circle and all United States territory north and west of the boundary formed by the Porcupine, Yukon, and Kuskokwim Rivers; all contiguous seas, including the Arctic Ocean and the Beaufort, Bering, and Chukchi Seas; and the Aleutian chain.[14]

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[10] "DOD Expects to Play a Supporting Role to Other Federal Agencies and Has Efforts Under Way to Address Capability Needs and Update Plans" (GAO-15-566) (Washington, D.C.: United States Government Accountability Office, 2015), 12 http://www.gao.gov/products/GAO-15-566.

[11] Robert D. Blackwell and Janine A. Davidson, "Media Call: The 2015 National Security Strategy," *Council on Foreign Relations*, February 10, 2015, http://www.cfr.org/grand-strategy/media-call-2015-national-security-strategy/p36117; Michaela David, "U.S. National Strategy for the Arctic Region: Strong Foothold or Thin Ice," The Arctic Institute, May 13, 2013, accessed November 6, 2017, https://www.thearcticinstitute.org/us-national-strategy-for-arctic-region/.

[12] National Snow and Ice Data Center, "What is the Arctic," accessed July 14, 2017, https://nsidc.org/cryosphere/arctic-meteorology/arctic.html.

[13] Janine L. Murray, Louwrens Hacquebord, Dennis J. Gregor, and Harald Loeng, "Physical/Geographical Characteristics of the Arctic," in *AMAP Assessment Report: Arctic Pollution,* ed. Janine L. Murray (Oslo, 1998), 10.

[14] 15 USC § 4111.

This thesis will use the 15 USC § 4111 when talking about the Arctic. Figures 1–3 depict the various Arctic definitions.

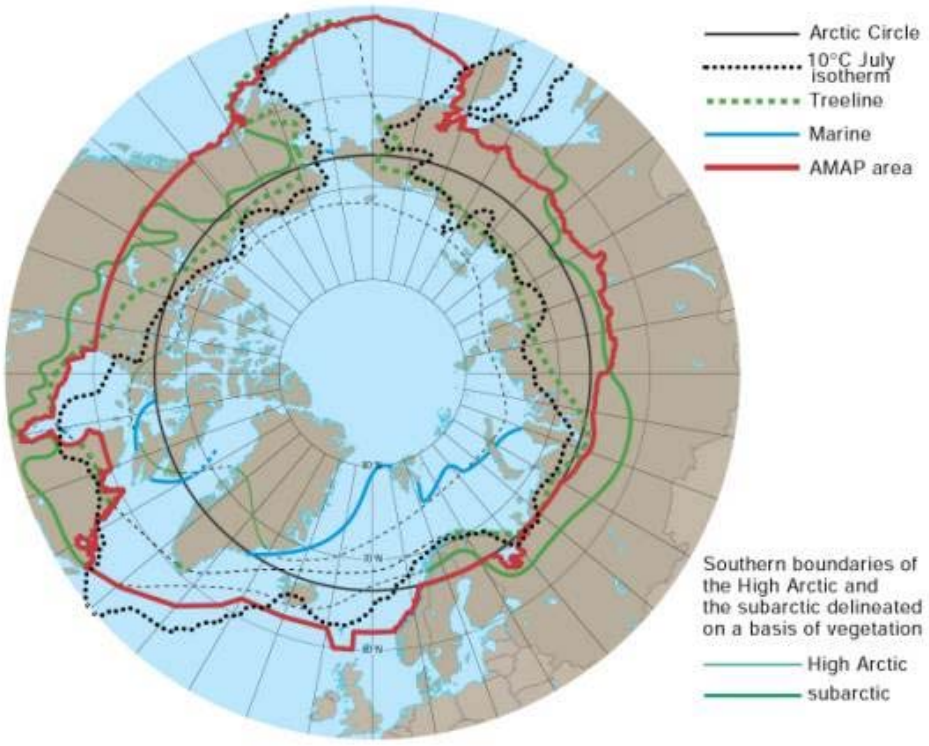

Figure 1. Map of the Arctic depicting some of the Arctic definitions.[15]

[15] Arctic Studies Program, Arctic Monitoring and Assessment Program (AMAP), accessed July 14, 2017, http://arcticstudies.pbworks.com/w/page/13623280/AMAP.

Figure 2. Arctic indigenous people[16]

Figure 3. Arctic as defined by 15 USC § 4111

[16] Encyclopedia Britannica, "Aleut," accessed July 19, 2017, https://www.britannica.com/topic/Aleut.

The Arctic is an area of extremes–continuous daylight during the summer months and darkness during winter; temperatures at Barrow exceeding 60º Fahrenheit in the summer to minus 40º Fahrenheit in the winter; and periods when the sea ice makes travel nearly impossible. It encompasses 24 time zones, 4 million people from eight different nations, and 40 different ethnic groups. Unlike Antarctica, the Arctic is an ocean, albeit frozen at various places and times, surrounded by three continents.[17] These extremes have not dissuaded exploration or research in the Arctic, which dates back to the time of the Vikings with modern explorations by Willem Barents (1594-1597), Henry Hudson (1607-1610), James Cook (1776-1779), and William Parry (1820s) to the first nuclear submarine, USS Prago (1993-1998) and others.[18]

Limited infrastructure and vast distances add to the Arctic's extremes. Barrow (pop 4,429), the largest U.S. city on the north slope of Alaska is accessible only by air and sea.[19] By comparison, the largest Russian city, Murmansk (pop 305,000), is on the verge of completing its Murmansk Transportation Hub consisting of roads, railways, ports, and other facilities and serves as the western hub of the Northern Sea Route (NSR).[20] Dutch Harbor is the only deep-water port in Alaska, which requires deep draft vessels to anchor offshore when supplying cities north of the Bering Strait.[21] Due to its higher latitude, there is limited/degraded communication (radio, satellite, and cellular networks) in the Arctic.[22] Despite these extremes, the United States Geological Survey

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[17] Arctic Council, "Arctic People," accessed January 15, 2017, http://www.arctic-council.org/index.php/en/our-work/arctic-peoples, and Arctic Centre, University of Lapland, "Arctic Indigenous Peoples, accessed October 29, 2017, http://www.arcticcentre.org/EN/communications/arcticregion/Arctic-Indigenous-Peoples.

[18] Woods Hole Oceanographic Institution, Polar Discovery, "The Arctic: Exploration Timeline,: accessed January 14, 2017, http://polardiscovery.whoi.edu/arctic/1993.html.

[19] The City of Barrow, accessed January 14, 2017, http://www.cityofbarrow.org/index.php/about-barrow.

[20] Welcome to Russia, Murmansk city, Russia, accessed January 15, 2017, http://russiatrek.org/murmansk-city; "Huge Implications of Russia's Northern Sea Route. An Alternative to the Suez Canal?," *Hellenic Shipping News,* November 27, 2017, accessed November 27, 2017, http://www.hellenicshippingnews.com/huge-implications-of-russias-northern-sea-route-an-alternative-to-the-suez-canal/.

[21] United States Coast Guard, *Arctic Strategy*, Washington,, DC (May 2013), 14.

[22] "European Space Agency," Arctic Poses Communications Challenges, http://www.esa.int/Our_Activities/Preparing_for_the_Future/Space_for_Earth/Arctic/Arctic_poses_communications_challenges.

(USGS) reports the Arctic may contain the world's largest unexplored areas of petroleum and another 44 billion barrels of undiscovered natural gas reserves.[23]

As there is no lack of planning, debating, or studying the Arctic, there is also no shortage of opinions as to what the U.S. should or should not do:

- Retired Rear Admiral Akimoto speculated as more of the Arctic polar ice melts, it would free up the Arctic Ocean to increase naval presence and power projections. This would then ignite a new cold war and overturn previous conventional wisdom, assumption, and strategy that the Arctic is an impenetrable sea route.[24]

- Others concur with Admiral Akimoto and urge the United States to set aside its neglect of the Arctic and if nothing else, "establish a greater maritime presence."[25]

- The United States should seek to demilitarize the Arctic through diplomatic means, by either leveraging existing relationships with North Atlantic Treaty Organization (NATO), or collaborating with the public and private sectors.[26]

- The Arctic presents the world a once in a lifetime opportunity to learn from previous mishaps and "to rewrite the rules of the game for developing a frontier economy," which if done properly is a win for the environment, the global economy, and indigenous people who call the Arctic home.[27]

- Finally, a Task Force sponsored by the Council on Foreign Relations studied the Arctic from four broad areas: U.S. Policy, National Security, Economic, Energy and Environmental Interests, and Alaska and Alaskan Natives and concluded the Arctic is at a major turning point requiring the

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[23] USGS Undiscovered oil resources in the Federal portion of the 1002 Area of the Arctic National Wildlife Refuge: an economic update, accessed January 14, 2017, https://pubs.usgs.gov/of/2005/1217/pdf/2005-1217.pdf; additional studies found at https://energy.usgs.gov/RegionalStudies/Arctic.aspx.

[24] RADM (Retired) Kazumine Akimoto, "Power Games in the Arctic Ocean," October 20, 2009, accessed January 15, 2017, http://www.institutenorth.org/assets/images/uploads/files/Power.pdf.

[25] Packard C. Trent, "An evaluation of the Arctic—will it become an area of cooperation or conflict?," (master's thesis, Naval Postgraduate School, 2011), 92.

[26] Brandon J. Daigle and Brian W. James, "Assessing the Strategic Utility of the High North: The Colder War," (master's thesis, Naval Postgraduate School, 2016), 59-64.

[27] Borgensen, "The Coming Arctic Boom: As the Ice Melts, the Region Heats Up."

> United States to embark on new investments to ensure our national interests and security.[28]

From a Homeland Security perspective, given the other threats the United States faces–terrorism, violent extremism, proliferation of weapons of mass destruction, transnational organized crime, and cyberattacks–the Arctic is a stable region despite ongoing disputes depicted in Figure 4. However, as we will see next, the national strategies, policies, and goals for the Arctic are a series of disjointed publications, which adds to the problem space.

[28] Thad W. Allen and Christine Todd Whitman, *Independent task force report*: *Vol. 75. Arctic Imperatives: Reinforcing U.S. Strategy on America's Fourth Coast,* New York, NY: Council on Foreign Relations.

Figure 4. Ongoing Arctic disputes[29]

2. National Goals for the Arctic

We have an awakening at the national level -- that we have got to pay attention to what's happening in the Arctic... What is our strategic approach? Is it going to be the next military campaign, or is it going to

[29] "Geopolitique de l'Arctique: la course pour les ressources", 19 October 2007, by Philippe Rekacewicz, Monde Diplomatique from Roderick Kefferpütz, "On thin ice? (Mis)interpreting Russian policy in the high north", CEPS Policy Brief no. 205, 2010.

> [be] working among coast guards, looking at rising sea levels, northern migrations of fish stocks?[30]

The above quote by Admiral Zukunft may lead the reader to believe the United States has either no national strategy for the Arctic or one not suited for today's Arctic environment. Commander William Dwyer's Naval Postgraduate School thesis, describes the Nation's Arctic policy, as a "wish list" that lacks direction, funding, or authority.[31] The following explores the development of the major national strategy, policies, and goals for the Arctic; Appendix A contains a complete list of the U.S. national Arctic policies.

Implemented in 1994, *Presidential Decision Directive/NSC-26–United States Policy on the Arctic and Antarctic Regions (PDD-26)* recognized the need for leadership and international cooperation in the Arctic and Antarctica, while at the same time it acknowledged the differences between the two regions. *PDD-26* established six objectives for the Arctic and four for Antarctica. Written at the end of the Cold War, *PDD-26* recognized new opportunities for cooperation with Russia, allowing the United States to shift its emphasis in the Arctic from traditional threats to environmental, biological and natural resource issues, while maintaining "peace and stability in the region."[32]

Fifteen year later, the 2009 *National Security Presidential Directive 66/Homeland Security Presidential Directive 25 (NSPD 66/HSPD 25)–Arctic Region Policy* replaced *PDD-26* and was the country's first Arctic specific national policy; *PDD-26* remains the Nation's policy for Antarctic. Although *NSPD 66/HSPD 25*'s policies are similar to those in *PDD-26* (see Appendix A), it did establish three policy elements with a defense/ homeland security nexus: "National Security and Homeland Interests in the Arctic," "Maritime Transportation in the Arctic," and "Environmental Protection and

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[30] Comment made by Admiral Paul Zukunft, Commandant of the United States Coast Guard, The Wilson Center – Arctic Circle Forum, Key Quotes from Keynote Speakers, accessed October 6, 2017, https://www.wilsoncenter.org/event/day-1-the-wilson-center-arctic-circle-forum.

[31] William G. Dwyer, "The Evolving Arctic: Current State Of U.S. Arctic Policy," (master's thesis, Naval Postgraduate School, 2013), 17.

[32] The White House, Presidential Decision Directive/NSC – PDD 26, "United States Policy on the Arctic and Antarctic Regions, June 9, 1994, 2-5.

Conservation of Natural Resources."[33] Each policy element is co-chaired by multiple Departments and Agencies. Implementation plans include broad statements–project sea power, exercise sovereignty, establish a risk-based capability to address hazards due to increased presence of people, and a risk-based approach based on the best available information as the means to protect the environment and natural resources.[34] Despite their similarities, the creation of a separate national strategy for the Arctic separate from Antarctica recognizes the uniqueness, challenges, and opportunities of both regions.

In 2010 and again in 2015, then President Barack Obama released the *National Security Strategy*. The 2010 *National Security Strategy* mentions the Arctic in one sentence prior to the conclusion.

> The United States is an Arctic Nation with broad and fundamental interests in the Arctic region, where we seek to meet our national security needs, protect the environment, responsibly manage resources, account for indigenous communities, support scientific research, and strengthen international cooperation on a wide range of issues.[35]

In the 2015 *National Security Strategy*, the Arctic appears in three sections: "Climate Change," "Air and Maritime Security," and "Advance our Energy Security."[36] Given the threats and challenges facing the U.S. at this time, the Arctic is a footnote to defeating al-Qa'ida and its affiliates, improving our relationship with China, India, and Russia, reducing the spread of nuclear weapons and preventing cybersecurity threats.[37]

Calling the Arctic "one of our planet's last great frontiers," the 2013 *National Strategy for the Arctic Region* identified "three lines of effort: Advance United States Security Interest, Pursue Responsible Arctic Region Stewardship and Strengthen International Cooperation."[38] These three lines of effort (LOEs) follow four guiding principles: "Safeguard Peace and Stability, Make Decisions Using the Best Available

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[33] White House, National Security Presidential Directive 66/Homeland Security Presidential Directive 25 (NSPD-66/HSPD-25), "Arctic Region," January 9, 2009, 1-14.

[34] Ibid., 12-13.

[35] "National Security Strategy," May 2010, 50.

[36] The White House, "National Security Strategy," February 2015, Washington, DC., 12, 13, and 16.

[37] Idid., 1, 3, and 27.

[38] White House, National Strategy for the Arctic Region, Washington, D.C. (May 10, 2013), i and 2.

Information, Pursue Innovative Arrangements, and Consult and Coordinate with Alaska Natives."[39] Unlike other strategic documents, which fall short on details, that is not the case for the 2013 *National Strategy for the Arctic Region*. In 2014, the Arctic Executive Steering Committee (AESC) released the *Implementation Framework for the National Strategy for the Arctic Region (Framework)*; the AESC updated the *Framework* in 2016. Beginning with the 2014 *Framework* and continuing with the 2016 version, the *Framework* identifies "specific actions supported by programs overseen by Federal entities" for the three LOEs. LOE 1, "Advance U.S. Security Interests," and three actionable programs from LOE 3, "Strengthen International Cooperation," apply to this thesis.[40] LOE 1 states the highest priority for the Federal Government is "protecting the American people, our sovereign territory and rights, and the natural resources and other interests of the United States."[41] The National Security Council (NSC) coordinates efforts for LOE 1, which has eight actionable programs. The Department of State coordinates LOE 3 and as experts debate the usefulness of the Arctic Council's governance; at the heart of LOE 3 is cooperation and not conflict..[42] Going it alone in the Arctic may display the Arctic's pioneering spirit, but this is often fraught with unforeseen challenges and pitfalls. In the Arctic there are few, if any, issues affecting a single country. See Appendix B for details on LOEs 1 and 3.

There are a couple other documents of note. The 1959 Antarctic Treaty along with the 1980 Convention on the Conservation of Antarctic Marine Living Resources and the 1991 Environmental Protection Protocol established an international framework ensuring Antarctica remains a "zone of peace and international cooperation"[43] No similar treaty or international conventions/protocols exists for the Arctic. Finally, the United Nations Convention on the Law of the Sea (UNCLOS) replaced four 1958 treaties and went into

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[39] Ibid., 2-3.

[40] Arctic Executive Steering Committee, "Implementation Framework for the National Strategy for the Arctic Region," Washington, D.C. (March 2016), 3.

[41] Ibid., 5.

[42] Douglas C. Nord, "The Challenge of Arctic Governance," *Wilson Quarterly*, Summer 2017, accessed October 8, 2017, https://www.wilsonquarterly.com/quarterly/into-the-arctic/the-challenge-of-arctic-governance/.

[43] Ibid., 5 and PDD-26, 5.

effect in 1994. Although the United States ratified the four 1958 treaties that formed the basis for UNCLOS, the United States has yet to ratify UNCLOS, but follows it as a matter of customary international law.[44] UNCLOS provides a legal framework for commercial and military shipping and use of natural resources within the world's oceans. Support for UNCLOS includes both sides of the aisle in Congress, Secretaries of State from both parties and the military service chiefs.[45] However, those for and against ratifying UNCLOS have valid points as to why the United States should or should not ratify it. I believe the U.S. should ratify UNCLOS, however, as U.S. policy makers debate the pros and cons of UNCLOS, other Arctic and non-Arctic nations have asserted their rights in the Arctic, with the United States increasingly finding itself at a considerable disadvantage in the Arctic regarding legal rights and limitations for energy exploration, telecommunication cables, and national security issues.[46] By contrast, all the other Arctic Council nations ratified UNCLOS, along with some 150 other countries.[47] UNCLOS serves as the foundation for their Arctic Policy, which in turn provides a common framework for other issues in the Arctic. As more and more of the polar ice cap melts, the Arctic is becoming the 21st century's space race; some speculate that unless the United States takes a greater leadership role, other countries will begin to dictate the rules for this new race.[48]

3. Summary

NSPD 66/HSPD 25, the 2015 *National Security Strategy* and the 2013 *National Strategy for the Arctic Region* along with its *Implementation Plan* form the basis of the

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[44] William Gallo, "Why hasn't the US Signed the Law of Sea Treaty," Voice of America, June 6, 2016, http://www.voanews.com/a/united-states-sign-law-sea-treaty/3364342.html

[45] Stewart Patrick, "(Almost) Everyone Agrees: The U.S. Should Ratify the Law of the Sea Treaty," The Atlantic, June 10, 2012, http://www.theatlantic.com/international/archive/2012/06/-almost-everyone-agrees-the-us-should-ratify-the-law-of-the-sea-treaty/258301/.

[46] Allen and Whitman, "Arctic Imperatives – Reinforcing U.S. Strategy on the America's Fourth Coast."

[47] United Nations Convention on the Law of the Sea,. Annex II, Commission on the limits of the Continental Shelf, 1982, Article 76, http://www.un.org/Depts/los/convention_agreements /texts/unclos/annex2.htm.

[48] Josh Rogin, "Who is in Charge of Arctic Policy?" *Foreign Policy*, May 7, 2010. http://thecable.foreignpolicy.com/posts/2010/05/07/who_s_in_charge_of_arctic_policy.

national Arctic policies for the United States today. From these foundational documents, specific Federal Executive Departments and Agencies, and others developed their Arctic policies.

Based on the above foundational documents, I will use the following strategic national Arctic goals to assess the effectiveness of the strategic patience and persistence strategy with respect to the four scenarios presented in Chapter V:

- Protect national security interests–these include unilateral or coalition operations across the spectrum of operations (see Figure 5) in order to deter war, terrorist attacks, and criminal acts using all means of national power (diplomacy, information, military and economics).[49]

- Protect the homeland–ensure safety and security of the American people through secure borders and enforcement of laws; protect the environment by "balancing environmental concerns with economic and national security priorities."[50]

- Ensure freedom of the sea–the Arctic is primarily a maritime domain currently with three shipping routes: the Northwest Passage (NWP), the NSR, and the Arctic Bridge Route and one future route Transpolar Sea Route (TSR), depicted in Figure 6. Freedom of the seas allows the U.S. to project sea power, ensures movement of people and commerce and provides the ability to respond to emergencies and incidents.[51]

[49] Frank Hoffman, Ph.D., "The Contemporary Spectrum of Conflict: Protracted, Gray Zone, Ambiguous, and Hybrid Modes of War," The Heritage Foundation, accessed October 9, 2017, http://index.heritage.org/military/2016/essays/contemporary-spectrum-of-conflict/ and Spectrum of Conflict, accessed October 9, 2017, http://ndupress.ndu.edu/Portals/68/Images/jfq/jfq-75/torruella-figure1.jpg.

[50] Borgensen, "The Coming Arctic Boom: As the Ice Melts, the Region Heats Up."

[51] NSPD-66/HSPD-25, 3-4, 9, 12-13.

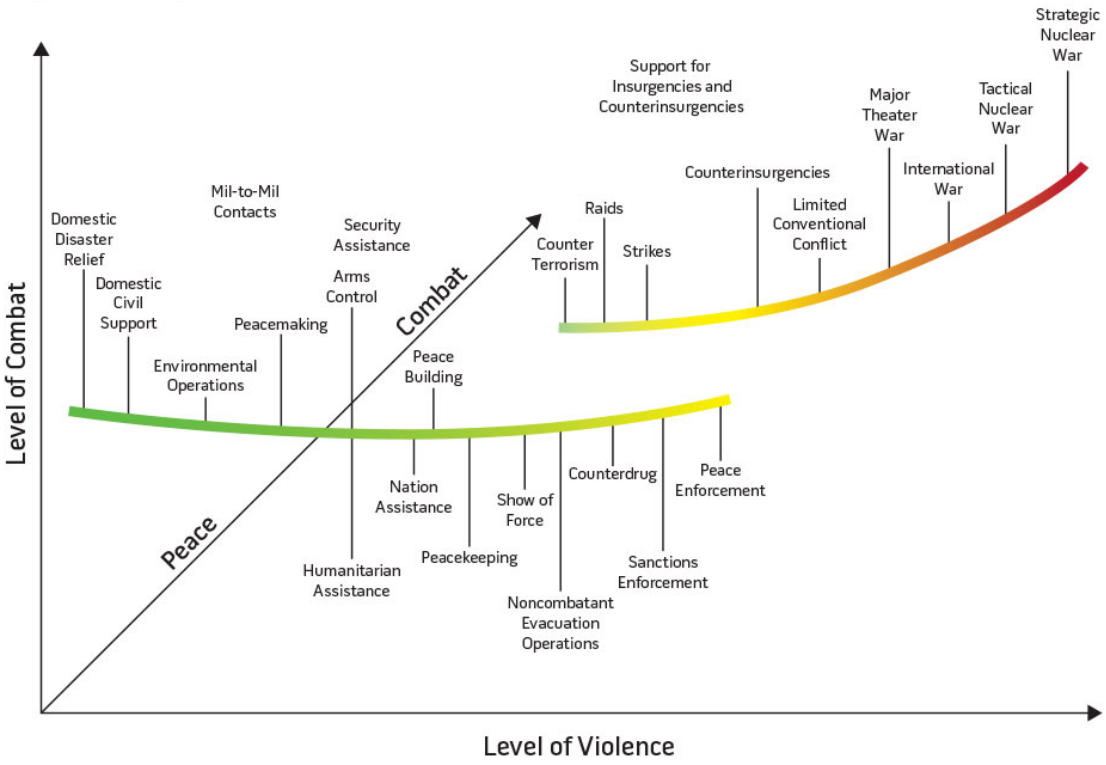

Figure 5. Spectrum of operations – Disaster relief to nuclear war[52]

[52] Source: http://ndupress.ndu.edu/Portals/68/Images/jfq/jfq-75/torruella-figure1.jpg.

Figure 6. Arctic shipping routes[53]

B. RESEARCH QUESTION

What strategy should the United States pursue in the Arctic? The Arctic is currently a region posing little threat to U.S. national security yet policy makers continue to evaluate, study, and debate the Arctic's strategic role in lieu of making a decision in a budget-constrained environment.[54] This thesis assesses the costs, risks, and benefits of applying the strategic patience and persistence as a strategy for the Arctic. The 2015 *National Security Strategy* introduced this as an alternative to spending billions to upgrade communication systems, improve infrastructure and domain awareness, train and equip forces, and build Arctic specific capabilities (e.g., polar capable icebreaker).[55] I will explore this strategy in general and specifics in Chapter IV.

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[53] Source: http://www.maritime-executive.com/article/Arctic-Shipping-is-Not-Chinas-New-Silk-Road-2014-02-14.

[54] Heather Conley, *A New Security Architecture for the Arctic, An American Perspective*, (Washington, D.C.: Center for Strategic and International Studies, 2012), 18.

[55] "National Security Strategy," February 2015, ii.

C. THESIS OUTLINE

Chapter II is a survey of the literature concerning the Arctic using five broad categories: climate change; air and maritime safety; energy security; diplomacy; and homeland security. The first three categories are from 2015 *National Security Strategy* while the last two cover overarching Arctic issues.

This thesis develops and assesses four different scenarios as its method. Chapter III, provides an overview of the scenario method, namely how it differs from models, simulations and games. Scenarios view the future not as a continuum of the present day but one with unlimited possibilities not constrained by our experiences, emotions, and expectations. I used an 8-step process to develop the four scenarios.

Chapter IV provides an overview of the strategic patience and persistence strategy by examining other wait-and-see strategies as well as critiques of this strategy.

Chapter V begins by examining key nations, issues, and factors affecting the future of the Arctic. Next, I develop four plausible future scenarios for the Arctic and determine if the U.S. can achieve the three national Arctic strategy goals using the strategic patience and persistence strategy.

Chapter VI analyzes each of the scenarios for their qualitative effectiveness to achieve the U.S. national security interests in the Arctic using three categories: costs, risks, and benefits.

Chapter VII concludes the thesis with a wrap-up, recommendations for policy makers and areas for future study.

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II. LITERATURE REVIEW

A. OVERVIEW

The literature reviewed is from a wide range of sources–U.S. and foreign government websites, professional journals, intergovernmental agencies, think tanks and media reports. It examines the current homeland security policies affecting the Arctic and uses as its framework the 2015 *National Security Strategy*, which identifies three broad areas of interest for the Arctic: Climate Change, Air and Maritime Security and Energy Security.[56] Additionally, the review looks at diplomatic and homeland security policies and issues affecting the Arctic.

The United States is an Arctic nation because of Alaska. Other Arctic nations have a greater Arctic presence–Canada has over 160,000 miles of coastline in the Arctic, by comparison, Alaska has 6,400 miles–and their policies are more comprehensive and unified when compared to the United States.[57] This split in policy is across all three areas—Climate Change, Air and Maritime Safety, and Energy Security. A common theme in the literature is the United States having a "domestic and foreign" Arctic policy.[58]

Differing geographic terms within the literature add confusion when discussing the Arctic. The Arctic is a region when viewed through *NSPD 66/HSPD 25–Arctic Region Policy*. Within the National Ocean Policy Implementation Plan Council, the Arctic is a body of water lumped together with the Great Lakes. From Department of Defense (DOD) perspective, the Arctic is a multi-domain geographical area under the

[56] "National Security Strategy," February 2015, The White House, Washington, D.C., 12, 13 and 16.

[57] Fly Alaska, Interesting Facts about Alaska, accessed November 15, 2018, http://www.flyalaska.com/alaskafacts.html.

[58] Philip E. Steinberg, "Maintaining hegemony at a distance: ambivalence in US Arctic policy," in *Polar Geopolitics?: Knowledges, Resources and Legal Regimes,* ed: Richard C. Powell and Klaus Dodds (MA: Northampton: Edward Elgar, 2014), 113-130.

Command and Control of two Combatant Commanders (U.S. Northern Command and U.S. European Command).[59]

B. DIPLOMATIC

When looking at policies affecting the Arctic, one might be tempted to restrict this to just U. S. policies, directives, laws and the like. However, the Arctic is not a nation-state, which the United States can negotiate treaties, trade agreements, security issues, etc. Rather it is a geographical area encompassing the territory of five countries Canada, Denmark, Norway, the Russian Federation, and the United States–commonly known as the Arctic Five, governed by the Arctic Council.[60]

The Arctic Council is the "preeminent intergovernmental forum for addressing issues related to the Arctic" and consists of three groups. Member States are the sole decision makers for the Arctic Council whose Chairmanship rotates every two years between Member States; these include the Arctic Five plus Finland, Iceland, and Sweden. Permanent Participants have full consultation rights and come from six international organizations representing over 500,000 indigenous people. Finally, Observer status is open to non-Arctic countries and select organizations, currently thirteen countries are Observers to the Arctic Council.[61] The Arctic Council is in a sense a mini-United Nations, with each Arctic nation advocating for its own national interest, which at times may conflict with the U.S.

There is almost universal agreement the United States' national Arctic polices are woefully inadequate.[62] This unpreparedness is not limited to the United States but also extends to the European Union (EU) and NATO and seems likely to remain this way with

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[59] Marcus Weisgerber, "Congress Will Rethink Combatant Command Boundaries," *Defense One,* February 25, 2016.

[60] Ibid., 15 U.S.C. 4111.; Eye on the Arctic, "Blog: The Return of the Arctic Five," accessed November 12, 2016, http://www.rcinet.ca/eye-on-the-arctic/2015/07/23/blog-the-return-of-the-arctic-five/.

[61] United States Department of State, Diplomacy in Action, Arctic Council, accessed November 18, 2016," http://www.state.gov/e/oes/ocns/opa/arc/ac/."

[62] Dwyer, "The Evolving Arctic: Current State of U.S. Arctic Policy," 2.

the new administration.[63] There are a variety of policies within the Executive Departments and Agencies, each approaching the Arctic through their own lens: DOD–defense and security; National Oceanic & Atmospheric Administration–stewardship and scientific data collection; United States Coast Guard (USCG) –maritime awareness, partnerships, modernization, and so forth–with little or no synchronization between the Departments and Agencies.[64] This approach provides redundancy and adaptiveness, but at an increase in costs as this is an uncoordinated effort.

C. CLIMATE CHANGE

The 2015 *National Security Strategy* identified climate change as "an urgent and growing threat to our national security."[65] A large volume of the literature on the topic focused on politicians, scientists, and activists debating the science, or lack of it, around climate change. Former President Obama made climate change a cornerstone of his administration.[66] Scientists have little to no doubt about the climatic changes taking place in the Arctic today, but notwithstanding this, there is a political debate about this issue that might influence U.S. policy regarding the Arctic.[67] While United States policy makers debate the merits of the science behind global warming, other countries are

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[63] European Union, External Action, *EU Arctic Policy,* June 15, 2016, accessed January 1, 2017, https://eeas.europa.eu/headquarters/headquarters-homepage/418/eu-arctic-policy_en.; Coffey, Luke and Daniel Kochis, "NATO Summit 2016: Time for an Arctic Strategy 2016," *The Heritage Foundation,* June 16, 2016, http://www.heritage.org/research/reports/2016/06/nato-summit-2016-time-for-an-arctic-strategy; Breum, Martin, "Trump, Thule and America's uncertain Arctic Future", *The Arctic Journal*, November 18, 2016, http://arcticjournal.com/politics/2708/trump-thule-and-americas-uncertain-arctic-future; Joël Plouffe, U.S. Arctic Foreign Policy in the Era of President Trump: A Preliminary Assessment, *Canadian Global Affairs Institute* (Calgary, CA), November 2017, 1.

[64] United States. National Oceanic and Atmospheric Administration. *NOAA's Arctic Vision & Strategy* ([Silver Spring, Md.?]: National Oceanic and Atmospheric Administration, 2010).; "United States Coast Guard Arctic Strategy," United States Coast Guard Headquarters, Washington, D.C., (May 2013).

[65] "National Security Strategy," February 2015, 12.

[66] Barack Obama, *Climate Change and President Obama's Action Plan,* accessed December 29, 2016, https://www.whitehouse.gov/president-obama-climate-action-plan.

[67] Taylor, P.C., W. Maslowski, J. Perlwitz, and D.J. Wuebbles, 2017: *Arctic Changes and their Effects on Alaska and the Rest of the United States*, 303; Clare Foran, "Donald Trump and the Triumph of Climate-Change Denial," *The Atlantic*, December 25, 2016, accessed December 29, 2016, https://www.theatlantic.com/politics/archive/2016/12/donald-trump-climate-change-skeptic-denial/510359/.; *The Guardian,* Climate Change scepticism, accessed December 29, 2016, https://www.theguardian.com/environment/climate-change-scepticism.

moving forward with their policies and plans for the Arctic. The literature suggests this policy difference is due in part to geography and indigenous people.

The impact of climate change on indigenous people is seen by the effects of rising sea levels on where they can live, their livelihood (hunting and fishing), and health concerns and from an increase in tourism and other human activities. By contrast, the strategies for Canada, Norway, and the Kingdom of Denmark incorporate the connectedness of the indigenous people to the land.[68]

D. AIR AND MARITIME SAFETY

As in the previous section, the use of terms within the literature blurs the distinctions between air and maritime safety versus air and maritime security. The International Maritime Organization (IMO) established the Polar Code, which governs shipbuilding and operations in the polar region.[69] From the IMO perspective, maritime safety means ships built to withstand the harsh arctic environment and warning systems to avoid hazards.

The DOD and the USCG both agree that maritime awareness in the Arctic exists today, but the ability to conduct other missions such as search and rescue, disaster response, and maritime security are extremely limited due to long distances, harsh environment, limited infrastructure, and resources.[70] A similar case exists for air safety– an aircraft can safely traverse the Arctic, but there are limited search and rescue assets,

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[68] Government of Canada, Global Affairs Canada, *Canada and the Arctic,* http://www.international.gc.ca/arctic-arctique/index.aspx?lang=eng.; Government of Canada. "Statement on Canada's Arctic Foreign Policy: Exercising Sovereignty and Promoting Canada's Northern Strategy Abroad." 6.; Norwegian Ministry of Foreign Affairs, The Norwegian Government's High North Strategy (December 2006), https://www.regjeringen.no/globalassets/upload/UD/Vedlegg/strategien.pdf, 7.; Daniel Buikema Fjaertoft, "Norwegian Grand Strategy and the Arctic," Global Brief (June 27, 2011), http://globalbrief.ca/blog/2011/06/27/norwegian-grand-strategy-and-the-arctic/.; Kingdom of Denmark, "Denmark, Greenland, and the Faroe Islands: Kingdom of Denmark Strategy for the Arctic 2011–2020," (Ministry of Foreign Affairs of Denmark, Greenland and the Faroe Islands, August 2011). http://www.uniset.ca/microstates/mss-denmark_en.pdf.

[69] International Maritime Organization, Shipping in Polar Waters, accessed December 15, 2016, http://www.imo.org/en/MediaCentre/HotTopics/polar/Pages/default.aspx.

[70] United States Department of Defense, *Report to Congress on Arctic Operations and the Northwest Passage,* May 2011, 14-15.

communication systems, and infrastructure (e.g., hospitals) to rescue and/or recover personnel from an aircraft accident or incident.

The consensus within the literature is that all nations want to enjoy freedom of navigation and overflight regardless of the where this takes place. Yet as more and more of the Arctic becomes navigable for shipping, there is a growing disparity between the Arctic and non-Arctic nations on shipping routes. China, Japan, and South Korea are the 2nd, 5th, and 6th largest exporting nations in the world, respectively, yet they are only Observers to the Arctic Council, with no power or ability to change policy or direction of the Arctic Council.[71] Norway is an active member of the Arctic Council and "views the Arctic as a top foreign and domestic policy priority." As such, it seeks to expand the influence of the Arctic Council, urging cooperation is better than conflict and as Espen Barth Eide, former Norwegian Minister of Defence said, "[w]e want people to join our club. That means they will not start another club."[72]

E. ENERGY SECURITY

Energy security within the Arctic occurs on a national level and involves more than just the Arctic Nations due in large part to opening of previously inaccessible areas for exploration of hydrocarbons. As in the previous sections, the United States has an Alaskan energy policy, drilling permitted in Prudhoe Bay, and another policy for the Arctic, as seen in former President Obama's Executive Order banning drilling in the Arctic.[73] President Trump overturned the Executive Order, which now awaits a decision from the District Court for the District of Alaska.[74] While we are at odds with Russia

[71] Central Intelligence Agency (CIA), CIA Factbook, Country Comparisons – Exports, accessed December 29, 2016, https://www.cia.gov/library/publications/the-world-factbook/rankorder/2078rank.html.

[72] Arctic Council, Norway and the Arctic Region, accessed, November 12, 2016, http://www.arctic-council.org/index.php/en/about-us/member-states/Norway; Morten Brugård, "Norway says yes to China in Arctic Council', Barents Observer. (January 22, 2013), http://barentsobserver.com/en/arctic/2013/01/norway-says-yes-china-arctic-council-22–01.

[73] Exec. Order No. 13754, 3 C.F.R. 90669 (2016), https://www.federalregister.gov/documents/2016/12/14/2016-30277/northern-bering-sea-climate-resilience.

[74] Donald Trump, Executive Order 13795, "Implementing an American-First Offshore Energy Strategy," *Code of Federal Regulations,* title 3 (2017 comp): 20815; EarthJustice, "LAWSUIT CHALLENGES TRUMP REVERSAL OF ARCTIC AND ATLANTIC DRILLING BAN," May 3, 2107, accessed November 13, 2017, https://earthjustice.org/news/press/2017/lawsuit-challenges-trump-reversal-of-arctic-and-atlantic-drilling-ban.

over the hacking of the Democratic National Committee email system, Syria and other events, Norway and others acknowledge Russia is not the same Russia as during the Cold War, but a neighbor they must engage for their own security and to ensure sustainability of the natural resources they both share.

Within the literature is a three-way tension when it comes to energy security. On one side is the science, which claims the Arctic has the world's largest untapped gas and oil reserves in the world. Environmental groups challenge the amount and value of gas and oil in the Arctic, especially in light of nations, companies and individuals moving away from gas and oil to renewable energy. The current administration wants to open up the Arctic for exploration; however, this back-and-forth on Arctic policy creates confusion with our allies and uncertainty for companies looking to invest in the Arctic. The third group comprises those in the gas and oil industry who predict that it will be years before wind and solar replace gas and oil, and in the meantime the indigenous people and their communities depend upon the gas and oil industry for jobs. There is significant unpredictability about how quickly the energy system will change from oil and gas to renewable energy. A specific issue is the expense of drilling for oil and gas in the Arctic given prevailing oil prices, i.e., cheaper reserves within the Organization of the Petroleum Exporting Countries (OPEC) and other competing sources of oil and gas. Finally, oil prices are sensitive to supply/demand balance as seen in 2014 when a 2 million barrel oversupply caused oil prices to collapse from $100/barrel to $50.[75] Other research suggests oil prices will never go above $50/barrel due to new techniques to extract oil from shale.[76]

F. HOMELAND SECURITY

Finally, there are a variety of documents governing homeland security in the United States from the DOD, United States Navy, and USCG. Each highlights their

[75] Clifford Krauss, "Oil Prices: What to Make of the Volatility," *New York Times,* June 14, 2017, accessed November 13, 2017, https://www.nytimes.com/interactive/2017/business/energy-environment/oil-prices.html.

[76] Robert Looney, "Does OPEC have a Future?," August 25, 2107, accessed November 13, 2017, http://web.nps.edu/Video/portal/Video.aspx?enc=yqTjB6mWdb9iHdUvQbdI%2fZrMnFNVdd5X.

specific role and mission in the Arctic but given the fiscal environment and other security issues, the Arctic remains a low priority. By contrast, the other Arctic Nations have a more comprehensive and cohesive strategy and plan. Here are samples from Canada, Denmark, Norway, and from the Observer Nations on the Arctic Council.

Canada's Arctic strategy is rooted in their *Northern Strategy.* This strategy recognizes their connectedness to the Arctic–geographically, its native peoples, and the need for leadership as the Arctic opens up to new opportunities. Its "first and most important pillar" is sovereignty and its first priority is to resolve boundary issues with Denmark and the United States.[77] Canada's unambiguously states their commitment to the Arctic in the closing of their *Northern Strategy:*

> Through our Arctic foreign policy, we are also sending a clear message: Canada is in control of its Arctic lands and waters and takes its stewardship role and responsibilities seriously. Canada continues to stand up for its interests in the Arctic. When positions or actions are taken by others that affect our national interests, undermine the cooperative relationships we have built, or demonstrate a lack of sensitivity to the interests or perspectives of Arctic peoples or states, we respond.[78]

To date, Canada is the only ally of the United States moving ahead in the Arctic with respect to defense, law enforcement, and infrastructure development.[79]

The Kingdom of Denmark includes Denmark, Greenland, and the Faroe Islands. Four pillars makeup Denmark's Arctic strategy: security, self-sustaining growth and development, protecting the environment, and international cooperation. Building on the *Danish Defence Agreement 2010–2014*, the *Danish Defence Agreement 2013–2017*, recognized the strategic importance of the Arctic and need for an increase military presence in the Arctic to respond to spills and accidents from increased shipping in the

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[77] Government of Canada, *Canada's Northern Strategy*, April 13, 2015, 9-10.

[78] Ibid., 27.

[79] Mate Wesley Aerandir, *Breaking the Ice: Potential U.S.-Russian Maritime Conflict in the Arctic* (Monterey, California. Naval Postgraduate School, 2012), 106.

Arctic.[80] Like Canada, the Danish government's policies and implementation plans are well ahead of the U.S. government.

Norway's Arctic strategy "considers the High North to be Norway's most important strategic priority area in the years ahead," a plan in one estimation "a step or two ahead" of Russia, Canada, Denmark and the United States.[81]

Finally, of the thirteen Observers countries on the Arctic Council, the United Kingdom, Germany, the Netherlands, Poland, and Italy each have an Arctic Policy, with China, Japan, and South Korea nearing completion on their Arctic policy.[82]

G. CONCLUSION

The Arctic by all indications is heating up–not only the weather but also the actions from numerous countries. Those nations not part of the Arctic Council see great potential in the Arctic–natural resources, decreased shipping times, etc. Except for Russia, the Arctic nations are democratic countries that seek peaceful relations with their neighbors, have reasonable laws and courts to settle disputes, and have stable economies which taken together should result in a peaceful Arctic for years to come.[83] Despite historic low oil prices and a harsh environment, Russia is pressing ahead with its ambitious oil exploration program, improvements to infrastructure in the Arctic, and building numerous military bases and airfields. While Arctic and non-Arctic nations have strategies and policies in place, the United States is still a checkerboard of strategies, policies, and plans, with no single Department or Agency synchronizing the nation's Arctic policy, activities, or infrastructure development.

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[80] Danish Ministry of Defence, Danish Defence Agreement 2010–2014 (June 24, 2009); Danish Ministry of Defence, Danish Defence Agreement 2013-2017 (April 10, 2014).

[81] Daniel Buikema Fjaertoft, "Norwegian Grand Strategy and the Arctic," *Global Brief* , June 27, 2011, accessed November 21, 2016, http://globalbrief.ca/blog/2011/06/27/norwegian-grand-strategy-and-the-arctic/.

[82] United States Department of State, Final Report of International Security Advisory Board on Arctic Policy, September 21, 2016.; Nengye Liu, The Diplomat, *China's Emerging Arctic Policy,* December 14, 2016, accessed January 1, 2017, http://thediplomat.com/tag/china-arctic-strategy/; Aki Tonami and Stewart Watters, *Japan's Arctic Policy: The Sum of Many Parts,* Arctic Yearbook 2012, 93-103.; Martin Kossa, *South Korea's Positioning in the Arctic*, September 30, 2015, accessed January 1, 2017, http://www.worldpolicy.org/blog/2015/09/30/south-korea%E2%80%99s-positioning-arctic.

[83] Borgerson, "Arctic Meltdown: The Economic and Security Implications of Global Warming," 4.

III. METHOD

In this chapter, I begin by examining how decision makers fail to accept an alternate future and the limitations of models, simulations, and games to predict these. As an alternative to these three approaches, I introduce the concept of scenario planning and the process to develop scenarios as a framework to understand and incorporate uncertainty into one's decision-making process. The thesis will use a modified "double uncertainty" matrix also known as the "2x2 matrix approach" utilizing scenarios representing four possible futures to evaluate the strategic patience and persistence strategy. These scenarios incorporate the most important factor, Russia, with the most uncertain factor, the rate of melting ice in the Arctic.[84]

A. SCENARIO PLANNING

1. Background

"All our knowledge is about the past, and all our decisions are about the future."[85] Likewise, at the end of an investment commercial or in the fine print of a mutual fund perspective, we hear or read; past performance is no guarantee of future results. These two statements may seem self-evident but consider the following real world events:

- Early last century, Brigadier General Billy Mitchell proposed using airplanes to sink battleships by dropping bombs on them. The U.S. Secretary of War Newton Baker remarked, "That idea is so damned nonsensical and impossible that I'm willing to stand on the bridge of a battleship while that nitwit tries to hit it from the air." Josephus Daniels, Secretary of the Navy, was also incredulous: "Good God! This man should be writing dime novels." Even the prestigious Scientific American proclaimed in 1910 "to affirm that the aeroplane is going to

[84] Muhammad Agar, Tugrul U. Daim and Anotnie Jetter, "A review of scenario planning," *Futures* 46(2013): 34, https://doi.org/10.1016/j.futures.2012.10.003.

[85] The quotation was taken from a presentation by Charles Yoe, "Scenario-Based Planning and Decision Making: Guidelines for Use in the U.S. Army Corps of Engineers Planning Studies and Literature Review," slide 4 of 37, accessed July 16, 2017, https://www.slideshare.net/nrazn/scenario-based-planning-and-decisionmaking.

'revolutionize' naval warfare of the future is to be guilty of the wildest exaggeration."[86]

- "During the war [World War II], the war with Japan had been re-enacted in the game rooms here by so many people and in so many different ways that nothing that happened during the war was a surprise—absolutely nothing except the kamikaze tactics towards the end of the war; we had not visualized those."[87]

- Writing with the "benefit and handicap of hindsight" the 9/11 Commission identified four kinds of failures: "imagination, policy, capabilities, and management." The report continues with three failures of imagination: Historical, Understanding the Danger, and Institutional.[88] In April 2001, the North American Aerospace Defense Command along with other Defense agencies conducted exercise Positive Force 01. The exercise tested the Department of Defense's ability to respond to multiple threats.[89] A proposed scenario of a terrorist group hijacking an airplane and flying it into the Pentagon was rejected as too unrealistic.[90]

These events highlight how individuals and organizations remained focus on the here and now and assumed future events and outcomes would continue as they always had; no one envisioned a different future.[91] After Action Reports, Lessons Learned, Congressional Hearings, Commission Reports (e.g. Warren, Tower, 9/11) and similar, chronicle what happened in order to prevent a repeat occurrence. Arie de Geus proposed five theories why managers and leaders fail to see what in hindsight was obvious.[92]

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[86] Paul J. H. Shoemaker, "Scenario Planning: A Tool for Strategic Thinking," *MIT Sloan Management Review*, accessed September 13, 2017, http://sloanreview.mit.edu/article/scenario-planning-a-tool-for-strategic-thinking/.

[87] Admiral Chester Nimitz, United States Naval War College, "Gaming," accessed July 16, 2017, https://www.usnwc.edu/Research---Gaming/War-Gaming/Documents/RAGE/Gaming.aspx.

[88] *The 9/11 Commission Report*: *Final Report of the National Commission on Terrorists Attacks Upon the United* States, official government edition, Washington, DC, National Commission on Terrorists Attacks on the United States, 2009, 339-360.

[89] "Positive Response," GlobalSercurity.org, June 9, 2002, accessed July 29, 2017, http://web.archive.org/web/20030107033310/http:/www.globalsecurity.org/military/ops/positive-force-ex.htm.

[90] Julian Borger, "Hijackers Fly into Pentagon? No Chance, Said Top Brass," *The Guardian*, April 15, 2004, accessed July 29, 2017, https://www.theguardian.com/world/2004/apr/15/usa.september11.

[91] Sir James Cable, "Surprise and the single scenario," *The RUSI Journal*, 128:1, 33-38, DOI: 10.1080/03071848308522214

[92] Arie de Geus, *The Living Company* (Boston, MA: Harvard Business School Press: 1997), 28-37.

1. Managers/leaders are stupid. de Geus suggests managers and leaders are not deaf, dumb, and stupid but rather, lack the skills "to cope with the changing nature of their environment."[93]

2. We can see only when a crisis opens our eyes. No one likes change for the sake of change, and at times, our nature is to resist change. While some might sum this up as no pain–no gain, de Geus contents a "company must act on the signals" not the pain.[94]

3. We can see only what we have experienced. de Geus tells the story of British explorers who in the early part of last century brought a tribal chief from the mountain regions of Malaysia to Singapore. The chief, whose tribe was still in the Stone Age, witnessed many things he had never seen before–ships, multi-story buildings, streets, diversity of people. When researchers asked him what the most important thing he saw was, he said he had never seen a man carry so many bananas. Buildings, ships, etc., were foreign to him, but a man pushing a cart loaded with bananas was something he could understand. This theory may explain why some are unable to react or be proactive. However, what accounts for the success and longevity of a dozen or so companies who are members of the Tercentenarian Club whose only membership requirement–be in existence for at least 300 years![95] Something else must be at work.

4. We cannot see what is emotionally difficult to see. To illustrate this theory, de Geus uses the rise of the oil industry in the 1970s and its fall in the 1980s. When oil went from $2 a barrel to $30, those responsible for it, the Exploration and Production (E&P) sector of the company were rewarded and promoted to top management positions. Later when oil prices retreated to $10 per barrel, company executives, mostly with E&P backgrounds, rationalized if we give it time things will get better. Their emotions got the better of them. While you can never ignore emotions, we do need to factor them in one's decision process in order to move forward.[96]

5. We can see only what is relevant to our view of the future. This theory led de Geus to research conducted by David Ingvar, who concluded our brain is "constantly attempting to make sense of the future." As you read my thesis, your mind is wandering to other things: what will I have for lunch,

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[93] Ibid., 28.

[94] Ibid., 30.

[95] Ibid., 31-32 and Harry Wallop, "They're 300 years old and still in business," *The Telegraph*, January 1, 2013, accessed September 20, 2017, http://www.telegraph.co.uk/finance/yourbusiness/9772950/Theyre-300-years-old-and-still-in-business.html.

[96] Ibid., 32-34.

> when will I return a colleague's call, and so on. While these are not predictions of what we will or will not do, they are according to Ingvar an internal process within the brain to sort out the myriad of information our body receives (sees, hears, feels, tastes, and smells). Our perceptions are not just about collecting or rejecting bits and pieces of information, but rather an active process to develop and refine paths and courses of action. In other words, we need to take time to "visit our future."[97]

A wide variety of tools are available today to think about the future–BCG Growth-Share Matrix, SWOT Analysis, Porter's Five Force Analysis, Value Chain Analysis, and Brainstorming. I will discuss what I believe is the most relevant strategic planning tool for thinking about the Arctic–scenario planning. Before that, I will discuss models, simulations, and games to provide context before moving to scenario planning.[98]

2. Models – Simulations – Games

Models, simulations, and games are tools used to forecast outcomes. Scenarios used for these three tools "do not have an intrinsic worth of their own," they merely set the stage or parameters for the model, simulation, or game to run.[99] What is the difference between models, simulations, and games?

A model is a "physical, mathematical, or otherwise logical representation of a system, entity, phenomenon, or process."[100] Models cover multiple disciplines: economic–forecasting our Gross Domestic Product; aerodynamics–effects of icing on an airplane's wing; meteorological–where the next hurricane might make landfall. Sometimes these forecasts are successful and at other times miss the mark or leave the observer wondering if the models are looking at the same data. Consider the various models and tracks from Hurricane Matthew, which struck the east coast of the U.S. in

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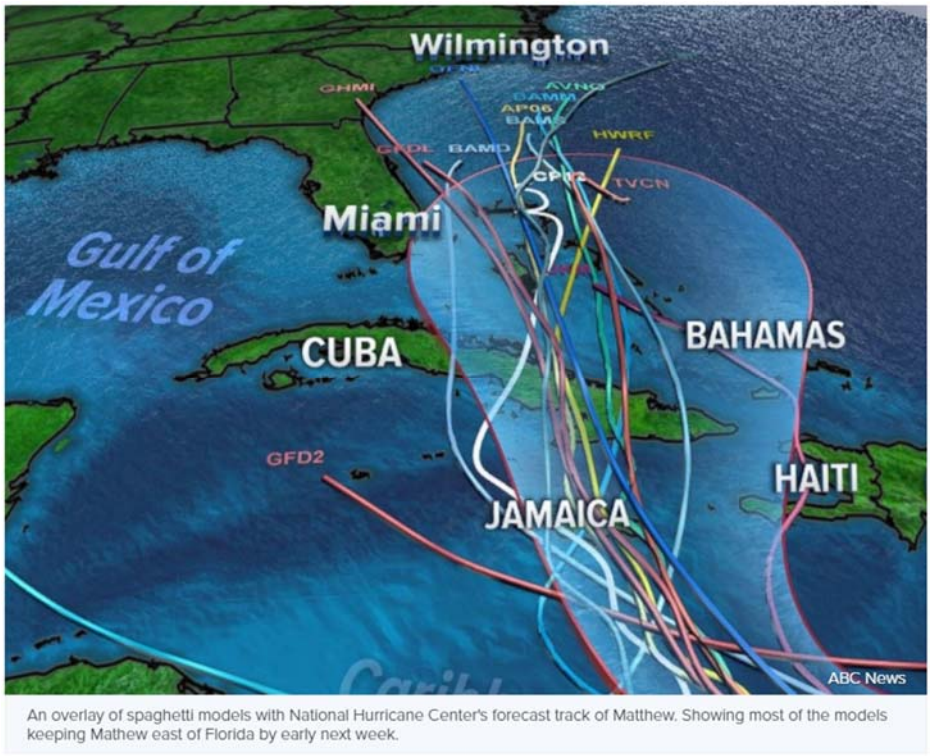
[97] Ibid., 34-37.

[98] Jay Ogilvy, "Scenario Planning and Strategic Forecasting," *Forbes,* January 8, 2015, accessed September 13, 2017, https://www.forbes.com/sites/stratfor/2015/01/08/scenario-planning-and-strategic-forecasting/#9ade5a3411a3.

[99] Ibid.,2.

[100] United States Army, Army Modeling and Simulation Office, *Modeling and Simulation Glossary,"* accessed August 13, 2017, http://www.ms.army.mil/library2/glossary.html#m.

2016, and its actual track depicted in the Figures 7 and 8. George Box characterized models as useful, even if they are wrong at times.[101]



An overlay of spaghetti models with National Hurricane Center's forecast track of Matthew. Showing most of the models keeping Mathew east of Florida by early next week.

Figure 7. Models depicting path of Hurricane Matthew[102]

[101] George E. P. Box, "Science and Statistics," *Journal of the American Statistical Association*, 71: 791–799, doi:10.1080/01621459.1976.10480949

[102] David Caplan, "Matthew Weakens Slightly to a Category 4 Hurricane With Jamaica in Its Path," *ABC News*, accessed August 13, 2017, http://abcnews.go.com/US/hurricane-matthew-gaining-strength-caribbean/story?id=42474108.

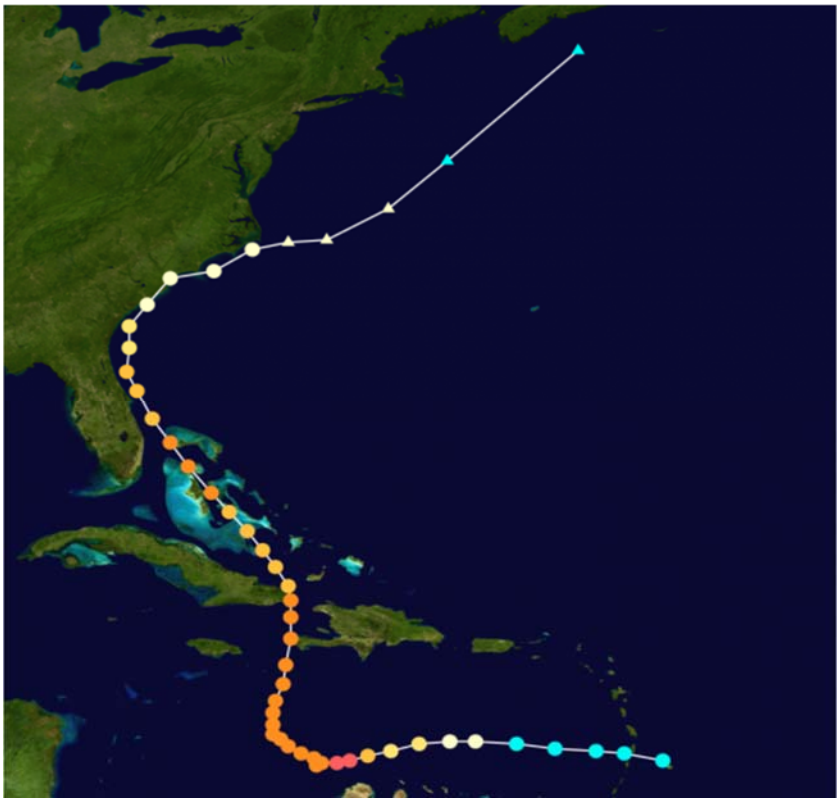


Figure 8. Actual track of Hurricane Matthew[103]

Simulations are "a method for implementing a model over time."[104] These include computer applications such as SimCity, Farming Simulator, ATC-Sim, to weather updates using Future Cast but also as a means to put learned concepts into practice. For example, in a classroom setting a firefighter trainee would learn how to fight a fire and what to do when things go wrong, but this classroom education becomes abundantly clear as the trainee enters a controlled fire in a burn house.

Lastly, a game is "a physical or mental competition in which the participants, called players, seek to achieve some objective within a given set of rules."[105] Physical

[103] National Weather Service, "Hurricane Matthew – October 8-9, 2016," accessed August 13, 2017, http://www.weather.gov/mhx/MatthewSummary.

[104] United States Army Modeling and Simulation Office, *Model and Simulation Glossary,* accessed August 28, 2017, http://www.ms.army.mil/library2/glossary.html#s.

[105] Under Secretary of Defense for Acquisition Technology, *DoD Modeling and Simulation (M&S) Glossary,* DOD Directive 5000.59-M, Washington, D.C.: Under Secretary of Defense for Acquisition Technology, 1998.

games include various sporting events (baseball, basketball, football, etc.) each with their own set of rules, fields of play to mental games using a deck of cards–Bridge, Pinochle; board games—Monopoly, Risk, Clue; or using one's Smart Phone, tablet or other electronic device. Games could also entail a freewheeling environment where participants are given a problem or topic to discuss resulting in discovery learning.[106]

B. SCENARIOS

1. Background

Broadly speaking, scenarios have been around for as long as man existed and pondered what the future might hold–consider Plato's *Republic* or George Orwell's *1984.*[107] However, it was not until the late 1960s and early 1970s when Royal Dutch/ Shell developed a new method used today by many companies and governments– "scenario planning" or "decision scenarios" rather than using the typical forecast models and techniques commonly used.[108] Consider the examples in Tables 1 and 2.

[106] James John Tritten, Creative use of scenarios. Monterey, California. Naval Postgraduate School, April 1987, accessed August 12, 2017, http://hdl.handle.net/10945/28895, 3-4.

[107] Ron Bradfield, George Wright, George Burt, George Cairns, and Kees Van Der Heijden, "The origins and evolution of scenario techniques in long range business planning," *Futures*, 37 (2005): 797, doi:10.1016/j.futures.2005.01.003.

[108] Pierre Wack, "Scenarios: Uncharted Waters Ahead," *Harvard Business Review* , September 1, 1985, 63, no. 5, accessed August 12, 2017, http://search.proquest.com/docview/227834288/, 73.

Table 1. Contrast between forecasts and reality–The oil supply[109]

Date on Which Forecast Was Made	The Forecast	The Reality
1885	Little or no chance of oil in California–*USGS*	8 billion barrels produced there since then
1891	Little or no chance of oil in Kansas or Texas–*USGS*	14 billion barrels produced there since then
1908	Maximum future supply: 22.5 billion barrels–*USGS Officials*	35 billion barrels produced since then
1920	Peak domestic production (then 0.45 billion barrels per year) almost reached–*Director, USGS*	1948 production was more than four times 1920 level
1947	Sufficient oil cannot be in the United States to satisfy domestic demand–*Chief Petroleum Division, State Department*	3 billion barrels found the next year, largest volume in history, and twice the annual consumption
1949	End of U.S. oil supply almost in sight–*Secretary of the Interior*	It wasn't and still isn't!

[109] Source: Brian Marsh, "Using Scenarios to Identify, Analyze, and Manage Uncertainty," in *Learning from the Future*, ed. Liam Fahey and Robert M. Randall, (New York, NY: John Wiley & Sons, Inc: 1998), 41.

Table 2. Average weekly hours[110]

Average Weekly Hours for the Manufacturing Sector	**1965**	**1975**	**1985**	**2000**
Predicted in 1965	41.1	41.5	38.9	32.0
Actual	41.4	39.4	40.5	41.2

Pierre Wack observed while forecasting tools were useful during stable times and conditions in the 1950s and 60s, during periods of uncertainty these missed the mark more often than not due in large part to too many moving parts and more importantly no "single projection" could predict the future anymore. He concluded it was better to accept ambiguity, try to make sense of it, and incorporate it into one's reasoning and decision making process.[111]

DOD defines scenarios as:

> a. Description of an exercise. It is part of the session database that configures the units and platforms and places them in specific locations with specific missions;
>
> b. An initial set of conditions and time line of significant events imposed on trainees or systems to achieve exercise objectives.[112]

Herman Kahn, considered the father of scenario planning, defines a scenario as "a set of hypothetical events set in a future constructed to clarify a possible chain of casual events as well as their decision points."[113] In Table 3, Bill Ralston and Ian Wilson provide a list of what scenarios are and are not.

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[110] Predicted row adapted from: Herman Kahn and Anthony J. Weiner, *The Year 2000: A Framework for Speculation on the Next Thirty-Three Years* (New York, NY: The Macmillan, 1967), 175 and Actual Row from: Federal Reserve Bank of St. Louis, Economic Research, assessed September 17, 2017, https://fred.stlouisfed.org/series/AWHMAN#0.

[111] Ibid.

[112] United States Army Modeling and Simulation Office, accessed August 28, 2017, http://www.ms.army.mil/library2/glossary.html#s.

[113] Herman and Weiner, *The Year 2000s*, 6.

Table 3. Scenarios: What they are and are not[114]

Scenarios are not…	**They are…**
Predictions	Descriptions of alternate plausible futures
Variations around a midpoint base case	Significantly, often structurally, different views of the future
"Snapshots" of endpoint (e.g., the market in 2010)	"Movies" of the evolving dynamics of the future
Generalized views of feared or desired futures	Specific "decision-focused" views of the future
Products of outside futurists	Results of management insight and perceptions

For this thesis, I will use the following definition for scenarios: "a tool for ordering one's perception about alternative future environments, in which one's decisions might be played out."[115]

2. Development of Scenarios

Over the years, three schools of scenario planning developed: intuitive, probabilistic modified trends (PMT) and La prospective.[116]

The intuitive method, proposed by Kahn and used by Wack at Royal Dutch/Shell is the dominant method used in the U.S. and abroad.[117] This method relies on a skilled scenario team with knowledge of the problem and the ability to communicate the

[114] Bill Ralston and Ian Wilson, *The Scenario-Planning Handbook: A Practitioner's Guide to Developing and Using Scenarios to Direct Strategy in Today's Uncertain Times,* (Crawsfordsville, IN: RR Donnelly, 2006), 16.

[115] Peter Schwartz, *The Art of the Long View – Planning for the Future in an Uncertain World,* (New York: Currency, 1996), 4.

[116] Muhammad, et al, "A review of scenario planning," 26.

[117] Ibid.

interaction of several factors (political, social, environment, technology and others) to managers in a way for them to re-perceive "their decisions about the future."[118]

PMT combines Trend-Impact Analysis (TIA) and Cross-Impact Analysis (CIA) to produce a "range of alternative futures" instead of a single outcome. By combining TIA and CIA, PMT incorporates historical data and a list of unseen future events and then using expert judgment determines the probability of this event occurring over time.[119]

Finally, in the late 1960s and early 1970s, France's Office for Regional Planning and Development, developed the La prospective method. Used principally for public sector planning, this method sees the future not as a predetermined outcome but rather provides policy makers with future visions to serve as a guide for their future actions. Table 4 provides an overview of the three schools and their key features.

[118] Muhammad Agar, Tugrul U. Daim and Anotnie Jetter, "A review of scenario planning," 27 and Peter Schwartz, *The Art of the Long View: Paths To Strategic Insight For Yourself And Your Company, 9.*

[119] Bradfield, et al, "The origins and evolution of scenario techniques in long range business planning," 800-801.

Table 4. Key features of the three scenario schools.[131]

Characteristics	Intuitive	PMT	La prospective
Purpose	Multiple, from a one-time activity to make sense of situations and developing strategy	A one-time activity to make extrapolative prediction and policy evaluation	Usually a one-time activity associated with developing more effective policy and strategic decisions
Perspective	"Descriptive or normative"	"Descriptive"	Generally descriptive
Time frame	"Varies: 3–20 years"	"Varies: 3–20 years"	"Varies: 3–20 years"
Methodology	Process oriented approach, essentially subjective and qualitative	Outcome oriented approach, very directed, objective, quantitative and analytical using computer based extrapolative simulation models	Outcome oriented approach, which is directed, objective, quantitative and analytical relying on complex computer based analysis and modeling
Starting point	"A particular management decision, issue or general concern"	"Decisions/issues for which detailed and reliable time data exists"	"A specific important phenomenon of concern"
Identifying key driving forces	Intuition, research, brainstorming techniques, and expert opinion	Curve fitting to past time series data to identify trends and use expert judgment to create a database of unprecedented events	Interviews with stakeholders and comprehensive structural analysis using sophisticated computer tools
Output of scenario exercise	Qualitative set of equally plausible scenarios in narrative form with strategic options, implications, and early warning signals	Quantitative baseline case plus upper and lower quartiles adjusted time series forecast	Multiple quantitative and qualitative scenarios supported by comprehensive analysis, implications and possible actions
Use of	"No, all scenarios are equally	"Yes, conditional probability of	"Yes, probability of the evolution

[131] Adapted from: Bradfield, et al, "The origins and evolution of scenario techniques in long range business planning, 807-808.

Characteristics	Intuitive	PMT	La prospective
probabilities	probable”	occurrence of unprecedented and disruptive future events”	of variables under assumption set of actors’ behavior”
Number of scenarios	“Generally 2–4”	“Usually 3–6 depends on the number of simulations”	“Multiple”
Evaluation criteria	“Coherence, comprehensiveness, internal consistency, novelty, supported by rigorous structural analysis and logics”	“Plausible and verifiable in retrospect”	“Coherence, comprehensiveness, internal consistency tested by rigorous analysis; plausible and verifiable in retrospect”

3. Steps to Develop a Scenario

Business models, strategic plans, long range planning and the like consider a variety of goals: where do we want to be in 3, 5, 10 or more years from now, how do I maintain my current rate of growth, how do we expand our business in to new markets and so forth. These use a variety of models–Value Networks, Strategy Diamond, Staehler's model in the Digital Economy, Business Model Canvas, four-box and others.[132] Scenario planning takes a different approach and "shifts the question from whether something will happen to what we would do if it did happen?" The planning cycle using scenarios requires a different approach.[133]

A variety of scenario development models is available. Figure 9 depicts SRI International's scenario development model and forms the basis for subsequent scenario development models.[134]

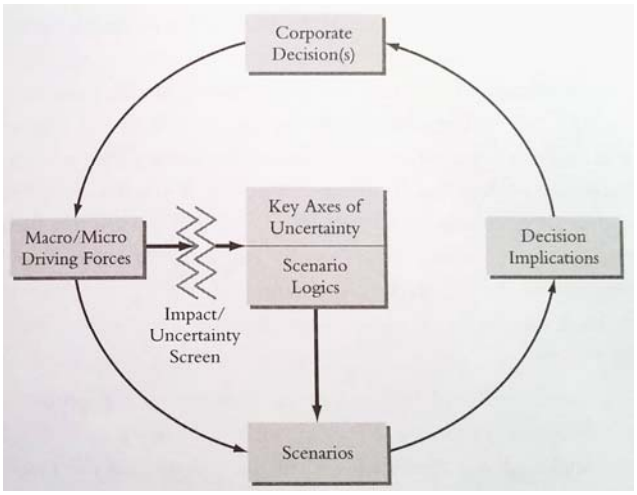

Figure 9. SRI scenario development model[135]

[132] Tim Kastelle, "Eight Models of Business Models, & Why They're Important," accessed September 14, 2017, http://timkastelle.org/blog/2012/01/eight-models-of-business-models-why-theyre-important/.

[133] Quote attributed to Aries de Geus, Shell Planning Group, from presentation by Harbottle Consulting, accessed September 14, 2017, http://www.slideserve.com/leal/effective-planning-risk-management-in-an-uncertain-business-environment.

[134] Peter Schwartz and James A. Ogilivy, "Plotting Your Scenarios," in *Learning from the Future,* ed. Liam Fahey and Robert M. Randall, (New York, NY: John Wiley & Sons, Inc: 1998), 60.

Drawing on two decades of work in scenario planning, shown in Figure 10 is the eight-step process developed by Peter Schwartz.[136] I used this process to develop the key factors, scenarios, and early indicators for the four scenarios used in Chapter V.

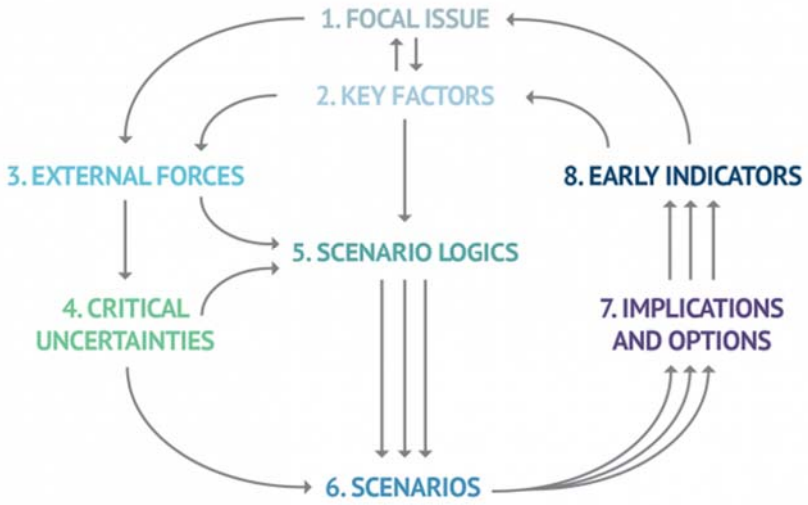

Figure 10. Eight-step scenario planning process[137]

1. Identify focal issue. This is done by building "from the outside in" versus the "inside out." For example, what cars or products should we have if the price of gas doubles in ten years, making our 10 mpg line of cars unaffordable?

2. Key factors in local the environment. Identify the stable or unchanged forces in any of the scenarios over time.[138]

3. External forces. This step tries to answer two important questions. What forces will drive those factors listed in step two and secondly, if only I had known then what happened today, e.g., knowing today when a breakthrough in affordable battery technology might happen, which could result in millions of people getting off the grid? An influence or driving

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[135] Ralston and Wilson, *The Scenario-Planning Handbook,* 23.

[136] Schwartz, *The Art of the Long View*, 241-247.

[137] Ogilvy, "Scenario Planning and Strategic Forecasting."

[138] Peter Schwartz et al, "Basic Approaches to Constructing Scenario," in *Learning from the Future,* ed. Liam Fahey and Robert M. Randall, (New York, NY: John Wiley & Sons, Inc: 1998), 55-186; Ralston and Wilson, *The Scenario-Planning Handbook,* 25, 39-177; and Kees Van Der Heijden, Scenarios – The Art of Strategic Conversation, (Chichester, West Sussex, UK: John Wiley & Sons, Ltd: 2005), 219-272.

force analysis diagram can visually depict trends over time and depict what is driving what. Figure 11 depicts an influence diagram.

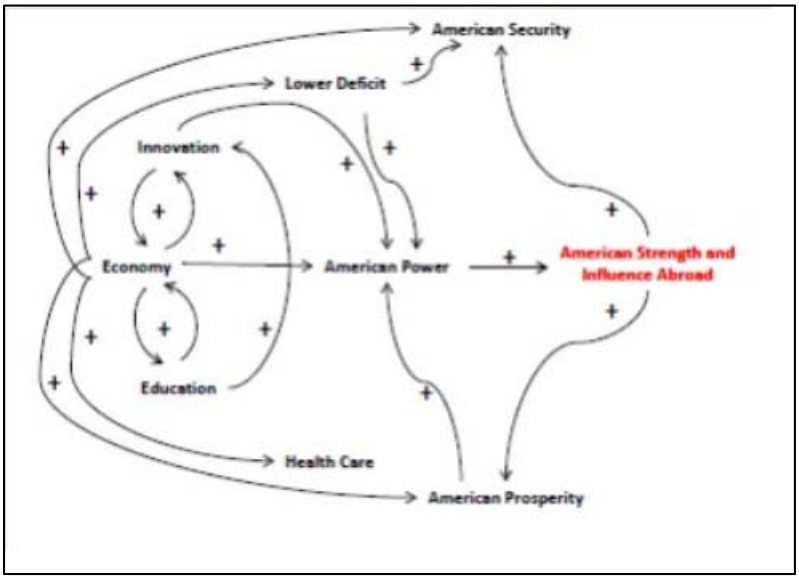

Figure 11. National security strategy influence diagram[139]

4. Critical uncertainties. The goal of this step is to identify two or three key factors or trends that are both important and uncertain.

5. Scenario logics. While the previous step may produce several factors or trends of importance and uncertainty, the goal of this step is to reduce this number to as few as possible, "whose differences make a difference to the decision maker" and then construct a scenario.[140] Construction of scenarios typically follows one of three methods: inductive, deductive and incremental.[141] I will discuss each method later.

6. Scenarios. This step ensures factors and trends identified in steps two and three are contained in each scenario.

7. Implications and options. By this point, you should have well defined scenario(s). Each scenario is rehearsed with individuals role-playing, looking for the scenario's strengthen and weakness. Ultimately, does the scenario get to the focal issue identified in step one?

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[139] Dan McCauley, "U.S.-Iran Rapprochment," *Small Wars Journal*, January 19, 2014, accessed November 13, 2017, http://smallwarsjournal.com/jrnl/art/us-iran-rapprochement.

[140] Schwartz, *The Art of the Long View*, 243.

[141] Van Der Heijden, Scenarios – The Art of Strategic Conversation, 236-254.

8. Early Indicators. Scenarios allow decision makers to consider an "alternative future environment."[142] Establishing indicators or signposts provides an early warning that what might happen is about to happen. In the business world, these indicators or signposts would give a company a competitive advantage over their competition. For homeland security, this may result in gaining a strategic advantage over an adversary or preventing an adversary from gaining a strategic advantage over you.

As mentioned above in step five, three methods are used to structure scenarios: inductive, deductive and incremental.[143] In the inductive method, the scenario begins from the specific to the general and can involve two approaches.[144] In the first approach, a series of storylines are built around a significant future event that may occur–if x happens how does that affect our bottom line? This approach is similar to putting together a jigsaw puzzle. The puzzle pieces represent the various events and decisions needed to achieve the future event. One way is to link a series of events or decisions into a logical order, not unlike putting together the frame or edge of the jigsaw puzzle. The second is to build natural grouping of events or decisions that at first do not appear connected to others, but with one key piece, these disparate groups come together. The second approach, which differs slightly from the first, begins with a decision most likely to occur and then maps the factors or drivers leading to this decision/outcome. Typically, this is done through a series of cause-and-effect snippets or vignettes. While this method has great potential, it comes with several cautions. It can cause planners to create good scenarios–answers what the boss wants to hear and bad scenarios–challenges an organization's mission resulting in managers digging in their heels. The root cause of the good versus bad approach is seeing the world as black-and-white, good or bad, more of the same and views change as something negative rather than a challenge and opportunity.[145]

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[142] Schwartz, *The Art of the Long View*, 4.

[143] Van Der Heijden, Scenarios – The Art of Strategic Conversation, 236.

[144] Ibid., 236-237 and Schwartz and Ogilivy, "Plotting Your Scenarios," 62-64.

[145] Van Der Heijden, Scenarios – The Art of Strategic Conversation, 128-130.

The deductive method is better suited for organizations where open and honest discussions are more difficult.[146] This method begins from the general to the specific or particular and achieves this by grouping the data into a few outcomes or end states. This process is akin to grouping/organizing a white-board with trends, key-words, or notes written on Post-its. From here, a scenario is constructed based on events, trends, or structure.[147] Figure 12 shows a typical event tree based on a logical flow of events and decisions.

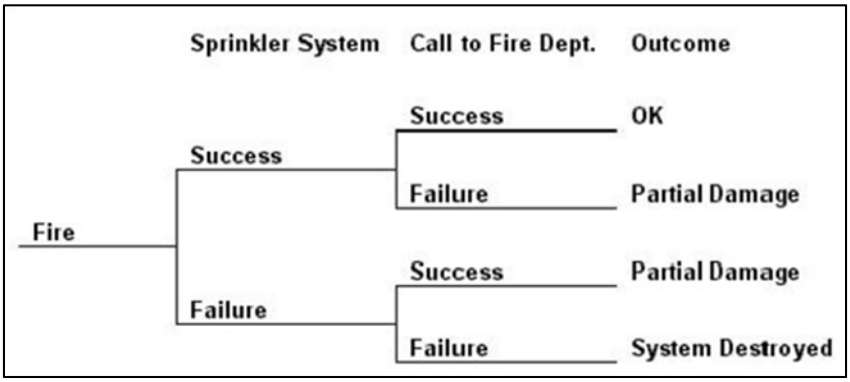

Figure 12. Simple event tree[148]

The second approach uses key trends when identifying key events is difficult. A current trend today is reducing one's carbon footprint–a practice a business should adopt because it is trending, the right thing to do, good for business or a combination of these.

Finally, the third and approach I will use in my thesis, identifies two or three key forces, and creates unique scenarios based on the outcomes of the key forces; typically depicted as a 2x2 matrix, where one axis represents the highest uncertain factor and the other axis, the factor with the greatest potential impact.[149] This method affords several advantages. It provides an academic approach to problems, avoids reducing the problem

[146] Schwartz and Ogilivy, "Plotting Your Scenarios," 64.

[147] Van Der Heijden, Scenarios – The Art of Strategic Conversation, 243.

[148] Alma Maria Jennifer Gutierrez, "Fault Tree and Event Tree in Risk Analysis," accessed September 22, 2017, https://www.slideshare.net/yorkypab/fault-tree-and-event-tree-in-risk-analysis.

[149] Rafael Ramirez and Angela Wilkinson, "Rethinking the 2x2 scenario method: Grid or frames?," *Technological Forecasting & Social Change* 86 (2014): 254-255, doi: 10.1016/j.techfore.2013.10.020.

to a single choice, provides a list of best-case/worst-case options, explains an otherwise complicated problem with easy-to-understand outlooks and alternatives not previously considered, is easy to communicate to decision makers, and generates extreme solutions to opposing forces.[150] Downsides to the 2x2 matrix include: the four corners/scenarios may not contain all the possible outcomes, and planners may settle on easy forces to ease anxiety or avoid studying the factors at length.[151] The reader needs only to reread the examples at the beginning of this chapter as a reminder how an unrealistic future or lack of imagination became a reality.

Until recently, 2x2 matrices fell into four categories: backbone, foundation, scaffold and showcase. As a physical backbone support a body, the axes in a scenario matrix are the backbone supporting the four scenarios. Foundation scenarios use a common framework or foundation to develop scenarios. A scaffold is useful when erecting a building, but eventually it gets in the way and is taken down, similarly, the scaffold scenario gets the ball rolling, then is abandoned to develop an array of scenarios. Finally, the showcase is analogous to putting Post-Its on a board organized around different themes, as opposed to driving forces used for backbones.[152] In their research, Ramirez and Wilkinson, found a fifth category based on a methodological choice; do the axes represent a continuum (more or less grid) or a set of incommensurate possibilities (either/or frames)?[153] Table 5 provides an overview of these two methodologies.

[150] Ramirez and Wilkinson, "Rethinking the 2x2 scenario method: Grid or frames?," 258.

[151] Van Der Heijden, Scenarios – The Art of Strategic Conversation, 250-251.

[152] Marjolein B.A. van Asselt, et al, *Foresight in Action – Developing Policy-Oriented Scenarios* (New York: Earthscan, 2010), 61-75.

[153] Ramirez and Wilkinson, "Rethinking the 2x2 scenario method: Grid or frames?," 258-259.

Table 5. Comparison of two ways of using the 2x2 matrix in deductive scenario planning[154]

2x2 matrix approach	Futures that can come about	Mutually incompatible or compatible	Position of present or past	Communicating the scenarios to those not producing them	Scenario result	Temporality of the scenario
'Either/or' frames	One of four	Mutually incompatible	Present located at the center of matrix, not in any of the scenario quadrants	Clear and memorable framework that provides a structure for rich storytelling about the interplay of factors and actors in each quadrant	4 'extreme' incompatible but plausible futures that help clarify branching points and enable comparative analysis	From now to one of the four possible contexts
'Both-and' grids	Several at once	Possible compatible, possibly sequential	Present and past in any location on the matrix	More nuanced storytelling and contrast; extra attention and effort must be invested in comparison, communication and engagement	Small set (≥ 2) of plausible alternative contexts representing past, present and future situations	From past to present to several (≥ 2) possible future contexts

[154] Ibid., 262.

In situations where scenario planning is new, or an organization is resistant to change, the incremental method offers a way to introduce scenario planning.[155] The incremental method begins with an organization's official future, where they see themselves in whatever timeline they created. Then it looks for obstacles that will either prevent the organization from ever achieving their future or not in their estimated timeline. Two methods are used to create these scenario–trend analysis and actor logic.[156] In the former, planners analyze where the official future is achievable based on current trends, forecasts, and conditions. While the latter examines the key actors needed to achieve the official future and is the logic used to develop the official future consistent with their thinking. In most cases, the planners will identify hurdles the official future will need to overcome in order to be successful. The objective of this method is to change the organization's thought from thinking inside the box to the outside-in approaches of the either the inductive or deductive methods.

C. CONCLUSION

One can think about the future in a variety of ways. Daydreaming is a fanciful approach, while models, simulations, and games provide a systematic and scientific method for looking at the future. One could even approach the future through a problem-solving approach: define the problem, gather evidence, propose alternatives, select criteria, project outcomes, weigh pros/cons, decide, and implement. All of these methods approach the future from the inside out. Scenarios on the other hand take an outside-in look at the future by exploring the problem space versus trying to predict it and embracing the uncertainty of the future rather than dismissing it. While many predictions and forecasts abound for the Arctic, there are still many unknowns.

Before presenting the four scenarios, I will examine the strategic patience and persistence strategy, and more broadly the absence of a strategy–is it a real strategy or an oversight by policy makers not ready to tackle a wicked problem.

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[155] Van Der Heijden, Scenarios – The Art of Strategic Conversation, 251.

[156] Ibid., 252.

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IV. STRATEGIC PATIENCE AND PERSISTENCE STRATEGY

Strategies come in all shapes and sizes and across many disciplines. Military strategies include air superiority, blitzkrieg, flanking maneuvers, and others. In business, typical strategies involve firms dominating their industry, monopolizing critical resources, or out-innovating their competitors. A good strategy recognizes the challenges, provides a way ahead, and typically has three elements or "kernel": a diagnosis, guiding policy, and coherent action.[157] In this chapter, I will examine a couple avoidance strategies before turning to the strategic patience and persistence strategy introduced by then President Obama in 2015.

A. KEEPING YOUR POWDER DRY

In 1642 at the Battle of Edgehill, Oliver Cromwell reportedly told his troops, "Put your trust in God, my boys, but mind to keep your powder dry."[158] In 2002, then Secretary of Defense Donald Rumsfeld during a news conference said "As we know, there are known knowns; there are things we know we know. We also know there are known unknowns; that is to say we know there are some things we do not know. But there are also unknown unknowns—the ones we don't know we don't know."[159] Lastly, Carl von Clausewitz in his work *On War* said, "War is the realm of uncertainty; three quarters of the factors on which action in war is based are wrapped in a fog of greater or lesser uncertainty," from which comes the saying–the fog of war.[160] These highlight the impossibility of knowing everything before making a decision, whereby one strategy is to preserve one's options, by waiting and seeing. Is the strategic patience and persistence strategy keeping one's powder dry, to come out guns blazing, when, and if needed?

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[157] Richard P. Rumelt, *Good Strategy Bad Strategy: the Difference and Why It Matters* (Crown Business, 2011), loc 188 and 241 of 5141, Kindle.

[158] William Safire, "Keep Your Powder Dry," *New York Times*, February 23, 1997, accessed November 14, 2017, http://www.nytimes.com/1997/02/23/magazine/keeping-your-powder-dry.html.

[159] Donald Rumsfled, "Donald Rumsfeld Unknown Unknowns!," YouTube video, 0:34, posted by Ali, August 7, 2009, https://www.youtube.com/watch?v=GiPe1OiKQuk.

[160] Carl von Clausewitz, *On War* (Princeton, NJ: Princeton University Press, 2008), 101.

When analyzing strategies, researchers and strategists may try to fit the strategy into a known typology or create a new one when an outlier does not fit the pattern of known strategies. However, the outlier may represent absence as a strategy.[161] I will look at several theories on strategy absence and decision avoidance and apply these to the strategic patience and persistence strategy.

1. Theory of Strategy Absence

The theory of Strategy Absence begins by rejecting the assumption all organizations have a strategy, whether explicit or implicit, to include models and theories such as the garbage can model, inertia theory, and others.[162] What follows are three approaches to understand strategy absence.

a. Absence as failure

On the surface, the absence of a strategy may indicate leadership failure to develop a strategy and erroneously cause one to look for a reason for this failure.[163] Research conducted by Miles and Snow identified four organizational types each with their own unique strategy: Defender, Reactor, Analyzer, and Prospector.[164] Reactors, despite perceiving change, are unable to respond to it and lack a dependable strategy, eventually these organizations move to one of other three typologies.[165] This suggests the absence of a strategy. However, the presence or absence of a strategy does not imply a successful or failed strategy, rather only that one exists or does not. An established strategy executed poorly and focused on the wrong goals in some cases is worse than no strategy at all.

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[161] Andrew Inkpen, "The Seeking of Strategy Where It Is Not: Towards a Theory of Strategy Absence," *Strategic Management Journal,* Vol 16 (1995), 313-314.

[162] Ibid.,313.

[163] Ibid.

[164] Raymond E. Miles and Charles C. Snow, *Organizational Strategy, Structure and Process* (Stanford, CA: Stanford University Press, 2003), 915-940.

[165] Ibid.

b. Absence as transition

A failing strategy may cause an organization to reevaluate its strategy and for a time abandon its failed strategy in search of a new one. This was the case for American auto manufactures during the automakers turbulent years in the late 1980s and early 1990s and most recently when GM announced it would build 20 new electric car models by 2023.[166] One might argue transitions only happen for well-established organizations. Others see the tech boom of early 1980s when personal computers began to enter the market place as a time of rapid transition for developers, manufactures, programmers and others trying to gauge and respond to consumer demand for this budding technology.[167]

c. Absence as virtue

In this approach, management makes a deliberate decision not to have a strategy either for constructive ambiguity or symbolic reasons. In the first case, ambiguity allows an organization to remain flexible rather than held hostage by its own strategy. In the Miles and Snow typology, this is the Prospector strategy. The Prospector's product or innovation allows them to trade efficiency in order to respond to unforeseen changes. Not tied to a strategy allows an organization to experiment and in the process the organization undergoes discovery learning. This was the case for Honda in the early 1960s when they entered the motorcycle market, which Harley-Davidson dominated at the time. Honda had no strategy other than to sell motorcycles; they were free to innovate, and only afterwards did they develop a strategy.[168] This model is common in tech start-up companies today. Others describe the typology as tents versus palaces–responsive/ flexible versus unresponsive/entrenched.

Strategy fulfills a symbolic and material role. Leaders see it as providing direction to the organization; subordinates as an ideal to rally around. Consider the Military Service academies' mottos: Duty, Honor, Country; From Knowledge, Seapower; and

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[166] Robert Baldwin, "GM will have 20 electric car models on the road by 2023," *Engadget,* October 2, 2017, accessed November 14, 2017, https://www.engadget.com/2017/10/02/gm-20-electric-car-models-by-2023/.

[167] Inkpen, "The Seeking of Strategy Where It Is Not: Towards a Theory of Strategy Absence," 317.

[168] Ibid., 318.

Integrity First–Service Before Self–Excellence in All We Do. From a materialistic viewpoint, leaders may view strategies as not a good use of their company's resources and "unnecessary as a competitive weapon."[169]

2. Decision Avoidance

Simply put decision avoidance is the "tendency to avoid making a choice by postponing it or by seeking an easy way out that involves no action or no change."[170] Researchers identified four phenomena for this: status quo bias, omission bias, choice deferral, and inaction inertia.[171]

Status quo bias or cognitive myopia is the concept whereby an individual chooses an immediate smaller gain or benefit over a larger gain/benefit happening in the future.[172] Said differently, the individual or decision maker has an inflated view of the current situation and sees no need to change. Similar to status quo bias is omission bias, whereby the preference is for "options that do not require action."[173]

Three theories exist why individuals would prefer the status quo or avoid action when doing so would be beneficial to them. First is regret–they changed before, only to discover that the grass wasn't greener on the other side. Loss or risk aversion–the potential loss is greater than the potential gain. Lastly, a lack of imagination– incremental change is preferred to what appears to them as a revolutionary or disruptive change.

Choice deferral is when "an individual chooses not to choose for the time being" in order to research options, conduct course of action analysis, and then either decides not to pursue any course of action or defers the decision to someone else.[174] There are three

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[169] Ibid., 319.

[170] Christopher J. Anderson, "The Psychology of Doing Nothing: Forms of Decision Avoidance Result From Reason and Emotion," *Psychology Bulletin* 129, no. 1, (2003): 139, doi:10.1037/033-2909.129.1.139.

[171] Ibid., 143-146.

[172] Elke U. Weber, "Breaking cognitive barriers to a sustainable future," *Psychology Today,* September 29, 2016, accessed November 14, 2017, https://cdn.psychologytoday.com/blog/after-service/201609/how-powerful-is-status-quo-bias.

[173] Ibid., 143.

[174] Ibid., 144.

reasons for choice deferral. Conflict–resulting in longer searches and more options. Additionally, when given too many options, justifications tend to get limited making the choice more difficult. Value maximization–how does one value or rate the options given their differences. Finally, preference uncertainty–not knowing what your future self or organization will like or benefit from because your future self or organization has yet to make up its mind.[175]

Lastly, inaction inertia is the "tendency of a person to omit action when he or she already passed up a similar, more attractive opportunity to act."[176] Root cause of this is counterfactual thinking–if only I had bought Apple stock, I could have retired by now, along with regret and an over or under perception of costs.

3. Real Options

Real Options enable decision makers to manage risks, rather than reacting to them, by either delaying a decision to invest/divest until conditions are more favorable.[177] Drawing from Richard Danzig's *Driving in the Dark,* here are a couple real options the DOD could undertake. Given the unpredictability of the future in general and the Arctic specifically, the DOD should "prioritize equipment that is most adaptable" and "accelerate decision tempo and delay some decisions."[178] The first axiom is seen in planes like the B-52H and RC-135 which entered the U.S. Air Force inventory in the 1960s and continue to fly today, while specialized aircraft like the A-6 (1971-1991), F-111 (1967-1998), C-141 (1965-2006) and MH-53 (1981-2008) have come and gone.[179] The latter pushes critical decisions to the last possible moment in the decision cycle rather than trying to solve them in earlier phases, which demands a new decision

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[175] Ibid., 144-145.

[176] Ibid., 146.

[177] Alida Zweidler, Carol Wedge and Bruce Metz, "The 'Real Options' Approach to Capital Decisions: Planning for Change," *What Work ~ An Essay from the PKAL Community,* Vol. IV, 1; Richard de Neufville, "Real Options: Dealing With Uncertainty In Systems Planning and Design," *Integrated Assessment* 2003, Vol. 4, No.1, 27.

[178] Richard Danzig, *Driving in the Dark – Ten Propositions About Prediction and National Security* (Washington, DC: Center for New American Security, 2011), 19-21 and 23-25.

[179] Air Force Fact Sheet, accessed December 2, 2017, http://www.af.mil/About-Us/Fact-Sheets/.

framework for the DOD, one following the private sector model of days/weeks/months versus months and years currently done within the DOD.

4. Conclusion

Non-events, by definition, go unnoticed and attempting to make connections or measurements between a non-event and a particular outcome are difficult. Was the success of the organization due in some part or all because they had no strategy, or the product was so good, it sold itself, or because of strong leadership? Strategy absence does not equate to a rudderless ship or imply a lack of focus or capabilities but rather allows an organization to consider all factors and not just those that meet their immediate strategic plans or objectives. While there are several reasons why decision makers may avoid making a decision, none of these is insurmountable. Indeed, delay may be a better option or the least–worst option. Lastly, real options provide decision makers a means to exploit uncertainty to their advantage. The next section looks at the strategic patience and persistence strategy applying the theories from this section to understand this strategy.

B. A STRATEGY IN SEARCH OF MEANING?

In the forward to the 2015 *National Security Strategy*, then President Obama wrote:

> As powerful as we are and will remain, our resources and influence are not infinite. And in a complex world, many of the security problems we face do not lend themselves to quick and easy fixes. The United States will always defend our interests and uphold our commitments to allies and partners. But, we have to make hard choices among many competing priorities, and we must always resist the over-reach that comes when we make decisions based upon fear. Moreover, we must recognize that a smart national security strategy does not rely solely on military power. … The challenges we face require *strategic patience and persistence*. They require us to take our responsibilities seriously and make the smart investments in the foundations of our national power. [emphasis added][180]

[180] National Security Strategy, February 2015, ii.

In the charge political environment of the day, pundits and critics simultaneously praised and vilified the 2015 *National Security Strategy* especially the phrase ”strategic patience and persistence.”[181]

> Patience does suggest waiting, and while this seems demoralizing, I defend it, because more active approaches have huge downsides.[182]

> … too often, what's missing here in Washington is a sense of perspective … While the dangers we face may be more numerous and varied, they are not of the existential nature we confronted during World War II or during the Cold War. We cannot afford to be buffeted by alarmism in a nearly instantaneous news cycle[183]

> I doubt ISIL, the Iranian mullahs, or Vladimir Putin will be intimidated by President Obama's strategy of "Strategic Patience."[184]

> The strategy offered by the White House is mostly Pablum.[185]

> It's not a strategy in any normal sense of the word. There's no vision, no short- or long-term objectives, no priorities, no sense of acceptable means[186]

The strategy appears to lack clear guidance and described by some as a strategy of leading from behind–doing little to nothing until something happens, someone crosses a red line and only then, the U.S. reacts. One could argue this has been the U.S. approach

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[181] Ibid.

[182] Robert E. Kelly, "Strategic Patience Isn't the Disaster You Think it is," *The National Interest,* March 7, 2017, accessed October 8, 2017, http://nationalinterest.org/feature/strategic-patience-isnt-the-disaster-you-think-it-19702.

[183] Gregory Korte, "Obama embraces doctrine of 'strategic patient'," *USA Today*, February 6, 2015, accessed October 8, 2017, https://www.usatoday.com/story/news/politics/2015/02/06/obama-national-security-strategy/22976909/.

[184] Tweet from Senator Lindsay Graham, accessed October 8, 2017, https://twitter.com/GrahamBlog/status/563726521765216256.

[185] Colin Clark, "Obama's 'Strategic Patience;' Folly or the Future," *Breaking Defense,* February 10, 2015, accessed October 8, 2017, https://breakingdefense.com/2015/02/obamas-strategic-patience-folly-or-the-future/.

[186] Email attributed to Steven Metz, found in Clark, "Obama's 'Strategic Patience;' Folly or the Future."

with respect to North Korea, and raises questions about this strategy.[187] Is this a failed strategy not worth continuing? Is there ever value in doing nothing and how does one determine the tipping point when action is needed? How does one measure success?

In a broader context, does the strategic patience and persistence strategy contain a kernel: a diagnosis that clearly recognizes the challenges of the situation, a guiding policy that points to a general way ahead and a set of coherent actions that back-up the guiding policy? I believe so even if short on specifics:

> Diagnosis: Our resources and influence are not infinite and in an uncertain world, it may be better to wait until the path is clearer, as we see in three scenarios before making any large commitments.
>
> Guiding policy: We will keep our powder dry and wait until the path forward becomes clear. Because, we have diverse resources to protect our security–military, diplomatic, partnerships–we can afford to carry a little risk in some area without sweating it too much.
>
> Set of coherent actions: We have a sufficient set of indirect actions that will us to react/respond to three of the four scenarios While the fourth scenario comes with a certain amount of risk, as the lone super power, we are able to shoulder this risk and respond when and if needed, in order to achieve our national goals for the Arctic.

C. CONCLUSION

Depending on whom you are the strategic patience and persistence strategy may convey the following: a failure by leadership to define a hard and fast strategy; a willingness for flexibility and efficiency; acknowledgment of the unknown unknowns; or making a small investment now in hope of a greater return later. All of these have an eye toward keeping the Nation's powder dry until needed. In the next chapter, I will present

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[187] Editorial, *Washington Post,* February 9, 2016, accessed October 8, 2017, https://www.washingtonpost.com/opinions/north-koreas-rocket-launch-shows-that-mr-obamas-strategic-patience-has-failed/2016/02/08/dd4a6d4e-ce8e-11e5-88cd-753e80cd29ad_story.html?utm_term=.26aec084d540; and Nicolas K. Gvosdev, "The Flaws of Obama's 'Strategic Patience'," *The National Interest,* January 21, 2016, accessed October 8, 2017, http://nationalinterest.org/feature/the-flaws-obamas-strategic-patience-14973?page=2.; Charles Krauthammer, "The Obama doctrine: Leading from behind," *Washington Post,* April 28, 2011, accessed October 8, 2017, https://www.washingtonpost.com/opinions/the-obama-doctrine-leading-from-behind/2011/04/28/AFBCy18E_story.html?tid=a_inl&utm_term=.c227a4e60025.

four potential future scenarios for the Arctic with the U.S. employing the strategic patience and persistence strategy.

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V. SCENARIOS AND RESULTS

A. INTRODUCTION

Scenario development is a systematic process. From our national goals for the Arctic, Chapter I, along with the literature review, Chapter II, and analysis of strategic patience and persistence strategy, Chapter IV, I identified the key issues, critical forces, and drivers in the Arctic.[188] Table 6 presents these in an Impact–Uncertainty Matrix. Impact reflects the influence this driver has on future outcomes while uncertainty is the degree to which the future outcomes are ambiguous.[189]

Table 6. Impact-uncertainty matrix

Level of Impact	Degree of Uncertainty: Low	Medium	High
High	-New territorial claims in the Arctic - Increase in maritime traffic through the Arctic	- U.S. Energy Security - Shipping Routes - Protect U.S. National Security interests	- International Cooperation - Uncertainty of U.S. environmental policies - OPEC's long-term strategy - Militarization of the Arctic
Medium	- Privatization efforts in the Arctic: tourism, renewable energy. - Worldwide movement to alternative energy	- Search & Rescue capabilities - U.S. fracking impacts on world oil markets - Weak governance by Arctic Council -Impact of non-Arctic nations on trade	- Improve infrastructure in the Arctic - U.S. ratifies UNCLOS - World demand for oil, gas, minerals, etc.
Low		- Research and development in the Arctic - U.S. National will	- Increase U.S. deficit with Arctic expansion

[188] Raslton and Wilson, *The Scenario-Planning Handbook*, 73-103.

[189] Ibid., 103-109.

From this matrix, the next step is to identify the key axes of uncertainty. What are the key variables that may independently influence policy in the Arctic? What independent variables drive uncertainties in the Arctic? Of greatest concern are those outlined with the bold border, darkest gray area, in Table 6. I believe Russia's actions and motives in the Arctic constitute the greatest impact and forecasting the sea ice levels the force most difficult to predict. Figure 13 depicts the set of four possible scenarios derived from these two forces.

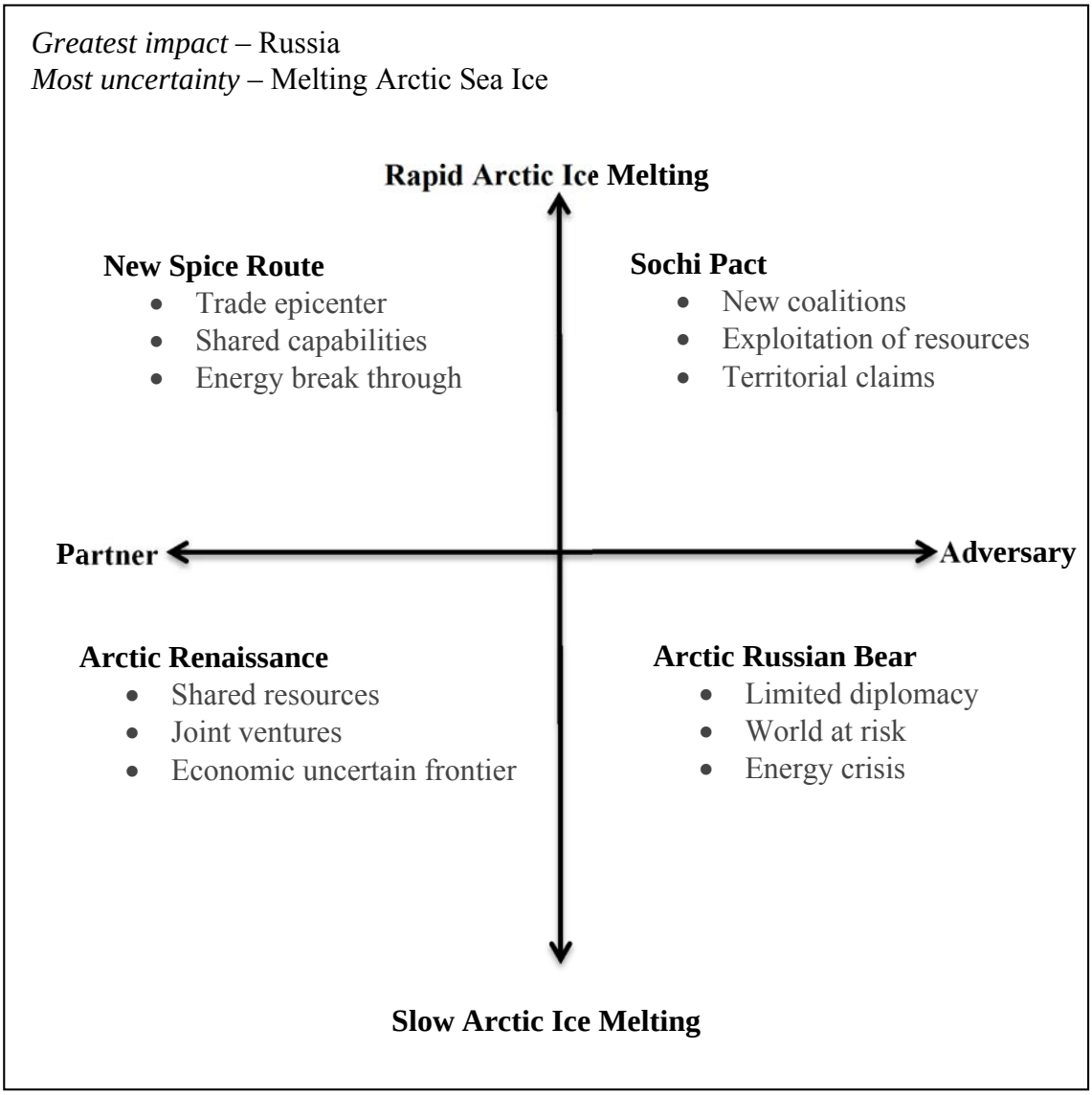

Figure 13. Four potential futures for the Arctic

In the next sections, I will examine how each scenario might evolve given the forces, trends, and uncertainties. These four scenarios and their narratives provide decision makers a means to "think about future threats and opportunities," especially when viewed through the lens of the strategic patience and persistence strategy.[190]

B. SCENARIO 1: NEW SPICE ROUTE

Trade between the Far East and Europe first took place via the Silk Road, an overland route from China, through modern day Iran, Pakistan, and Turkey, ending eventually in Rome. The rise of the Ottoman Empire in 1453 made this route economically unfeasible due to high taxes levied by the Ottoman Empire on those bound for Rome. Merchants turned from an overland route to a sea route, known as the Spice Route.[191] Six hundred years later, a new Spice Route opens because of the rapid ice melting in the Arctic.[192] Manufactures in the Far East now transport their goods to Europe and North America via the Arctic, nearly year round, saving time, fuel, and money over previous routes around the Cape of Good Hope or through the Suez and Panama Canals. While this was possible as early as 2010, the Arctic Ocean is now open to shipping 7 months of the year, with no assistance needed by icebreakers. The other 5 months, icebreakers are needed less than 50% of the time to ensure safe passage through the three arctic shipping routes (NWP, NSR and TSR). Russia's fleet of icebreakers made this shift possible along with their cooperation with the world's shipping and manufacturing industries. While other Arctic nations have icebreakers, most commissioned between 1990 and 2010, many are now reaching the end of their service life. The United States retired their last icebreaker in 2021 and other countries stopped construction and further development on icebreakers due to the Arctic's rapid ice melting. Two shifts by Russia and industry made using the Arctic seaways nearly year round possible. As Russia seized the initiative in supplying rockets to service the

[190] Ibid., 125-133.

[191] United Nations Educational, Scientific and Cultural Organization, "About the Silk Road," accessed November 17, 2017, https://en.unesco.org/silkroad/about-silk-road.

[192] Jugal K. Patel and Henry Fountain, "As Arctic Ice Vanishes, New Shipping Routes Open," *New York Times*, May 3, 2017, accessed November 17, 2017, https://www.nytimes.com/interactive/2017/05/03/science/earth/arctic-shipping.html.

International Space Station when NASA retired the Shuttle program, so now Russia is taking the lead to ensure safe navigation through the Arctic.[193] This shift by Russia started elsewhere in the 1990s with the shared economy or peer-to-peer businesses. Airbnb, Uber, eBay, and others transformed and disrupted their perspective business sector.[194] The Arctic shared economy includes Russia's willingness to allow its icebreakers to keep commerce and good moving through the Arctic and for shippers and manufactures to collaborate with them, thereby keeping their costs down and getting goods to market faster.

Russia and China enter into an agreement allowing China's State Construction & Engineering Corporation to construct five floating island cities: three in Russia's Exclusive Economic Zone (EEZ), one north of Greenland and the other north of Canada; the latter two via an agreement with Denmark and Canada. Once completed, scientists and tourists, and the multinational Arctic law enforcement organization will use these; additionally they will provide a safe harbor and a communication platform for those transiting the Arctic Ocean.[195] These floating island cities close two current gaps in the Arctic: more responsive search-and-rescue capability reducing response time from days or weeks to hours or less, and reliable and redundant communications.[196]

Energy security is the third transformation taking place in the Arctic. This transformation is not from additional oil or gas platforms or dredging for minerals as more of the Arctic Ocean becomes ice-free but rather utilizing the methane gas released as the permafrost thaws. After the Paris Agreement, Russian energy companies partnered

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[193] Loren Thompson, "Ripples From Crimea In Space: U.S. Seeks To End Reliance On Russian Engines For Satellite Launches," *Forbes,* April 7, 2014, accessed November 17, 2017, https://www.forbes.com/sites/lorenthompson/2014/04/07/new-rocket-engine-needed-to-rescue-americas-faltering-role-in-space/#4df1e84554d6.

[194] "The rise of the sharing economy: Peer-to-peer rental," *The Economist,* May 9, 2013, accessed November 17, 2017, https://www.economist.com/news/leaders/21573104-internet-everything-hire-rise-sharing-economy.

[195] Carl T.F. Ross and Ricardo Rodriguez McCullough, "Conceptual Design of a Floating Island City," *The Journal of Ocean Technology 5*, No. 1, 2010, accessed November 17, 2017, http://www.thejot.net/wp-content/uploads/2011/09/V5N1-Homeward-Bound-FINAL2.pdf.

[196] A.K. Sydnes et al, "International Cooperation on Search and Rescue in the Arctic," *Arctic Review on Law and Politics*, Vol. 8, 2017. Accessed November 19, 2017, 110, http://dx.doi.org/10.23865/arctic.v8.705.

with several European companies who embarked upon a biogas revolution in order to achieve the Agreement's goals.[197] Over the years, this partnership refined the recovery process, improved biogas engines, and developed other uses for biogas all in anticipation to capture the methane gas released due to the Arctic thaw.

Through these changes, the United States remained on the sidelines viewing the Arctic as a distant region with little or no connection to the lower 48 states and concentrated on issues closer to home–repairing crumbling infrastructure, improving cyber security, fixing a slowing economy and other issues.

C. SCENARIO 2: ARCTIC RENAISSANCE

Russia continues to spend billions in the Arctic improving infrastructure, building new military installations, repurposing others, training and stationing soldiers in the region and building a fleet of 62 icebreakers, despite years of accelerated melting of the sea in the Arctic. Russia defends the build-up citing long overdue modernization of its arctic forces and achieving four national goals: enhance internal security, study environmental changes taking place in the Arctic due to the accelerated melting of the Arctic ice, support its drilling and mining efforts, and provide Search and Rescue capability due to increase Arctic maritime traffic. Others speculate the build-up is to counter Finland and Sweden joining the NATO Alliance and an attempt by the Russians to control the Arctic and win a second Cold War.[198] Finland and Sweden view their NATO membership not as a challenge Russia but as support to their neighbor, Norway, and as providing a united Nordic front for cooperation with Russia.[199] Most other Arctic

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[197] John Abraham, "Methane release from melting permafrost could trigger dangerous global warming," *The Guardian,* October 13, 2016, accessed November 17, 2017, https://www.theguardian.com/environment/climate-consensus-97-per-cent/2015/oct/13/methane-release-from-melting-permafrost-could-trigger-dangerous-global-warming.

[198] The first Cold War, 1947-1991, was a geopolitical struggle between the Soviet Union and its satellite states and the western bloc – the U.S., NATO and others. The Soviet Union lost the first Cold War and the second Cold War is Russia's attempt to win control of the Arctic.

[199] Brandon J. Daigle and Brian W. James, "Assessing the Strategic Utility of the High North: The Colder War" (master's thesis, Naval Postgraduate School, 2016), 49 and 63, http://hdl.handle.net/10945/516767.

Nations, including the U.S., curtailed development in the Arctic due to costs, lessening of sea ice, and low risks to national security.

The United Nations continues to reject Russia's territorial claims beyond the 200-mile EEZ. Not fazed by these setbacks, Russia continues to drill for oil and mine for minerals in their EEZ. Technical and equipment failures combined with low pay, harsh drilling/mining conditions, and a lack of a qualified work-force have failed to achieve the Russian government forecasts for oil and mineral production in the Arctic. To overcome these setbacks, Russia partners with four multinational mining and drilling companies from Australia, United Kingdom, Brazil, and South Africa and begins to make marginal progress. Despite ongoing unrest and uncertainty in the Middle East and between OPEC members, industrial experts continue to question Russia's exploration in the Arctic. The oil industry has seen stable prices for 20 plus years ($25/barrel compared to $51/barrel in 2017), and a global reduction for oil demand due in large part to a breakthrough in autonomous electric vehicles, which created an on demand transport service and electrical generation almost exclusively from wind and solar.[200] Adding to the low but stable oil prices was a decision made in mid-2010s by the Kingdom of Saudi Arabia when they enacted their Vision 2030, which sold off a large portion of the state owned oil company in order to diversify the Kingdom's economy. When announced by Crown Prince and Chairman of the Council of Economic and Development Affairs Mohammad bin Salman bin Abdulaziz Al-Saud this bold vision was mocked by critics as "pure fantasy" and by others as a "positive project" calling it "Obligation 2030."[201]

In what many call a surprise move, Canada accepts the U.S. position on a territorial claim in the Beaufort Sea ending the long-standing territorial dispute.[202] The origin of the Beaufort Sea dispute dates back to the 1825 treaty between Russia and Great

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[200] James Arbio and Tony Seba, *Rethinking Transportation 2020-2030: The Disruption of Transportation and the Collapse of the Internal-Combustion Vehicle and Oil Industries,* accessed May 2017, www.rethinkx.com.

[201] "Vision 2030," Kingdom of Saudi Arabia, accessed October 25, 2017, http://vision2030.gov.sa/en and "A future of cheap oil," *The Week*, 18/25 August 2017, 13.

[202] Sian Griffiths, "US-Canada Arctic border dispute key to maritime riches," *BBC News,* August 2, 2010, accessed October 23, 2017, http://www.bbc.com/news/world-us-canada-10834006.

Britain.[203] Although the U.S. government acknowledged Canada's sovereignty and use of this territory, the U.S. Senate is still unwilling to ratify UNCLOS, which would provide the U.S. a means of arbitration to settle disputes, issues, and misinterpretations and provide stability in the Arctic.

The renaissance brought Europe out of the Middle Ages and into an era of discovery, exploration, growth in commerce, and other changes.[204] The events unfolding here become the catalysis for a second renaissance, one not centered in Europe, but in the Arctic, bringing it out of the Ice Age into the modern era. As in the previous scenario, the U.S. remains on the sidelines.

D. SCENARIO 3: SOCHI AGREEMENT

Unlike the U.S., which borders two oceans and two allies, Russia borders Europe/ NATO to the west, its former satellite countries to the southwest, India/China/Japan to the south and east and until recently the frozen Arctic to the north.[205] With the opening of the Arctic, Russia begins to pursue four national goals: "economics, security, transportation, and development."[206]

Russia's development pursuit began in 2007 when Russia planted a flag on the seafloor at the North Pole causing a flurry of speculation and outcry.[207] Russia has underway five major programs in the Arctic: build new and revitalize existing military bases, move troops into the region, build new icebreakers, invest in Arctic-optimized technology, and improve infrastructure to exploit natural resources.[208] Russia continued

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[203] Bernard H. Oxman, "The Rule of Law and the United Nations Convention on the Law of the Sea," *European Journal of International Law* 6, no. 3, (1996), http://www.ejil.org/pdfs/7/3/1369.pdf.

[204] *Encyclopedia Britannica*, "Renaissance," accessed November 18, 2017, https://www.britannica.com/event/Renaissance.

[205] Zbigniew Brzezinski, *The Grand Chessboard* (New York: Basic Books, 1997), 197-208.

[206] Caitlyn L. Antrim, "The Russian Arctic in the Twenty-First Century," in *Arctic Security in an Age of Climate Change*, ed. James Kraska, (Cambridge: Cambridge University Press, 2011), 111.

[207] C. J. Chivers, "Russians Plant Flag on the Arctic Seabed," *The New York Times*, August 3, 2007, accessed February 4, 2017, http://www.nytimes.com/2007/08/03/world/europe/03arctic.html.

[208] Andrew Poulin, "5 Ways Russia Is Positioning to Dominate the Arctic," *Russia Insider*, January 25, 2016, accessed April 28, 2017, http://russia-insider.com/en/politics/5-ways-russia-positioning-dominate-arctic/ri12418.

to test the West with its invasion and annexation of Crimea in 2014. However, with a change in the U.S. administration, Russia switches from hard power to "soft or non-hard power instruments in the Arctic."[209] Russia's advances in the Arctic continued in August 2017 with *Christophe de Margerie*, a Russian owned ship carrying liquefied natural gas, making it through the Northern Sea Route without the aid of an icebreaker. Russia plans on building 15 more of these specialized tankers.[210]

Russia seizes on America's reluctance to engage the world community to include its closest neighbors, Canada and Mexico, with three unexpected coup d'état. First, it establishes a bilateral agreement with Canada. This agreement is mutually beneficial to Canada and Russia to resolve their territorial claims, allowing Canada to control the Northwest Passage and Russia the Northern Sea Route. Second, Russia circumvents the Arctic Council and United Nations and creates a new partnership consisting of Russia, Canada, Sweden, Norway, Finland, Singapore, and South Korea, known as the *Sochi Agreement*. The *Sochi Agreement* is Russia's renewed attempt at unifying countries around its goals and away from the West, as it tried with the Warsaw Pact. This partnership is mutually beneficial to all in that Russia gains access to markets and technologies by providing needed sealift capabilities to their partners who see a greater benefit partnering with Russia than competing against it. Lastly, Russia relaxes its laws, which restricted public-private partnerships with Western governments and companies.[211] Recognizing success in these actions, Russia alone and in combination with the *Sochi Agreement* engages the non-Arctic nations seeking additional partnerships that are advantageous for each other.

The U.S. for its part continues to pursue policy choices inconsistent with the emergence of Russia's new posture as depicted in this scenario.

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[209] Alexander Sergunin, "Is Russia Going Hard or Soft in the Arctic," *The Wilson* Quarterly, Summer 2017, accessed October 26, 2017, https://www.wilsonquarterly.com/quarterly/into-the-arctic/is-russia-going-hard-or-soft-in-the-arctic/.

[210] Russell Goldman, "Russian Tanker Completes Arctic Passage Without Aid of Icebreaker," *The New York Times,* August 25, 2017, accessed October 26, 2017, https://www.nytimes.com/2017/08/25/world/europe/russia-tanker-christophe-de-margerie.html.

[211] Dingle and James, "Assessing the Strategic Utility of the High North," 55-58, 63-64.

E. SCENARIO 4: ARCTIC RUSSIAN BEAR

The DOD underwent two strategic changes or offsets to win the Cold War. The first offset occurred in the 1950s, when the United States gained a strategic advantage over the Soviet Union by developing a nuclear arsenal to counter their numerical conventional advantage in Europe.[212] Some twenty years later the Soviets closed the nuclear gap, requiring the U.S. to undergo a second offset–guided precision conventional weapons utilizing stealth, global positioning system and computer networks, all which made "accuracy independent of range."[213] Drawing from the U.S. success winning the first Cold War with superior technology despite a shrinking budget, Russia embarks on a similar plan for the Arctic. They do this with a robust plan to increase its Arctic military footprint and capabilities. This includes having a fleet of 55 icebreakers, building/ refurbishing nine Arctic military installations, training and equipping five Arctic Brigades, winterizing 25% of its conventional forces/equipment to allow it to operate in the Arctic, and conducting monthly live fire exercises involving all branches of its military services. As in the second scenario, Russia defends the build-up citing long overdue modernization of its arctic forces required to achieve their four national goals. Others view Russia's Arctic plan as an extension of their regional conflicts in Crimea, Syria, and Africa.

Although the NATO and others acknowledge this build-up, no country is in a position to match it. Decision makers deemed the Arctic low threat when faced with more pressing security issues namely persistent cyberattacks, homegrown violent extremism, and pandemic infections. Despite some uncertainty, scientific forecasts indicate, at least through 2050, a continual warming in the Arctic resulting in less sea ice and lessening the need for icebreakers and other specialized equipment. These predictions hold until 2025 when the Arctic slowly returns to seasonal freeze/thaw levels seen in the 1970s. However, it will take 10 years or longer before perennial (multiyear) ice returns to the

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[212] Van Jackson, "The Pentagon's Third Offset Strategy: What US Allies and Partners Need to Know," *The Diplomat*, April 28, 2015, accessed July 15, 2017, http://thediplomat.com/2015/04/the-pentagons-third-offset-strategy-what-us-allies-and-partners-need-to-know.

[213] Shawn Brimley, "Offset Strategies & Warfighting Regimes," *War on the Rocks*, October 15, 2014, accessed July 15, 2017, https://warontherocks.com/2014/10/offset-strategies-warfighting-regimes/.

Arctic, requiring icebreakers or other ice handed vessels in order to transit the Arctic shipping routes. These changes happened because of three changes: developed countries assisting developing countries lowering their greenhouse gases, an increase use of alternative fuels in autos and breakthroughs in green energy production.

Russia takes advantage of the West's complacency toward the Arctic with a series of provocative steps. The Russian Navy begins to reposition several of its icebreakers and Arctic capable warships in what analysts believe is an attempt to blockade the Bering Strait, which would create another Ice Curtain in the Arctic.[214] If successful, the blockade would stop all maritime traffic moving through the Arctic via the NSR, NWP, and TSR and could bring about a massive rescue and humanitarian mission, as the blockade would strand several cruise ships and numerous commercial fishing vessels. Peterson in his work suggests a Russian arctic blockade is a precursor to hostilities by preventing enemy forces access into or out of the Arctic.[215] As of now, U.S. intelligence agencies are uncertain of Russia's intent.

In 2022, in response to numerous state sponsored/supported cyberattacks, the UN expands the International Court of Justice's (ICJ's) jurisdiction to include state sponsored/supported cyberattacks. Russia's economy is feeling the effects of the ICJ imposed sanctions—high employment, lower life expectancy, and technologically trailing other developed countries.[216] Should Russia succeed in getting the blockade in place, analysts believe Russia will expand its oil and mineral exploration beyond their EEZ, in areas previous declared by the UN not part of Russia's EEZ and therefore off-limits for oil and mineral exploration/extraction.

While many of the U.S. partnerships remain–NATO, Arctic Council, bilateral defense agreements between the United States and Japan, Korea, Australia and New Zealand–economic sanctions and diplomatic pressure by these are unable to persuade

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[214] Peter A. Iseman, "Lifting the Ice Curtain," *The New York Times,* October 23, 1988, accessed October 27, 2017, http://www.nytimes.com/1988/10/23/magazine/lifting-the-ice-curtain.html?pagewanted=1; Charles C. Peterson, *Soviet Military Objectives in the Arctic Theater and How They Might Be Obtained,* Center for Naval Analysis, November 10, 1986, 11.

[215] Peterson, *Soviet Military Objectives in the Arctic Theater and How They Might Be Obtained*, 8-11.

[216] Sergunin, "Is Russia Going Hard or Soft in the Arctic".

Russia to abandon its actions or begin negotiations towards a mutually benefiting solution. Without firing a shot, launching a missile, or invading another country, Russia could hold the world at risk in an area none are prepared to venture.

F. SUMMARY

These scenarios present policymakers four alternate futures where Russia's actions either hold the world at risk (adversary role) or begins to aligns itself with other nations in first-of-its-kind relationships (partner role). At the same, we can see the impact the melting sea ice has on their and other nations actions. The next chapter will consider the risks, costs, and benefits of the U.S. pursuing the strategic patience and persistence strategy on its ability to protect its national security interest, the homeland and ensure freedom of the seas.

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VI. FINDINGS

The four scenarios narrated in the previous chapter are not predictions or forecasts about the future; rather they explore the problem space in order to prepare policy makers for specific "decision-focused" views of the future.[217] The four scenarios present challenges and opportunities for the national goals for the Arctic and reflect what James Schlesinger postulated shortly after the end of the Cold War:

> [I]n the Cold War the United States rose to the challenge. It persevered. It stayed the course. … But the Cold War was unique. There was a clear and present danger – an unequivocal threat that sustained the attention and the support of the American people. … Our *permanent interests* are less clearly defined and more difficult to discern. … Can we stay the course in this new context of foreign policy? Only if we are sufficiently disciplined to select those tasks, few in number, that truly involve the longer-term interests of this society -- and avoid becoming sidetracked by the many lesser tasks (brought to our attention by an enterprising news industry) that would exhaust the patience of the America public.[218]

A. EFFECTIVENESS OF THE STRATEGIC PATIENCE AND PERSISTENCE STRATEGY

In evaluating the effectiveness of the strategic patience and persistence strategy to achieve the U.S. three Arctic goals: protect its national security interest, the homeland and ensure freedom of the seas; I will use three categories: costs, risks, and benefits. Costs include more than annual expenditures by various levels of government toward homeland security but also non-tangible items. Such as the political, military, and diplomatic costs to U.S. standing in the world as it pursues a wait-and-see approach to the Arctic. Risks are the unintended consequences utilizing strategic patience and persistence strategy in achieving the national Arctic goals. Finally, benefits are an assessment of

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[217] Ralston and Wilson, *The Scenario-Planning Handbook: A Practitioner's Guide to Developing and Using Scenarios to Direct Strategy in Today's Uncertain Times,* 16.

[218] James Schlesinger, "Quest for a Post-Cold War Foreign Policy," *Foreign Affairs,* 1992/1993 America and the World, accessed October 28, 2017, https://www.foreignaffairs.com/articles/1993-02-01/quest-post-cold-war-foreign-policy.

whether the strategic patience and persistence strategy meets the U.S. Arctic goals in each scenario.[219] Table 7 provides a summary of the findings.

[219] John Mueller and Mark G. Stewart, "Balancing the Risks, Benefits, and Costs of Homeland Security," *Homeland Security Affairs* 7, Article 16 (August 2011). https://www.hsaj.org/articles/43.

Table 7. Summary of findings

Criteria	Scenarios			
	New Spice Route	**Arctic Renaissance**	**Sochi Agreement**	**Arctic Russian Bear**
Costs	In terms of money, this option costs the U.S. nothing. Scenario could diminish the U.S. standing in innovation, business, and leadership.	In terms of money, this option costs the U.S. nothing. U.S. diplomatic inaction may cause other countries to resolve disputes less favorable for the U.S. U.S. portrayed as unwilling to negotiate on seemingly minor disputes.	In terms of money, this option costs the U.S. nothing. However, U.S. standing in the world diminished as Russia takes the lead on diplomatic negotiations unifying disparate countries to common Arctic goals and objectives.	In terms of money, this option costs the U.S. nothing. However, this may prevent the U.S. to achieve its three Arctic goals.
Risks	Scenario poses little threat to the U.S. three Arctic goals; could hurt standing in the world. Failure by U.S. to develop infrastructure could leave it vulnerable, i.e., limited deep-water ports, airfields, etc. Russian investment has potential for dual use, civilian and military, the U.S. has limited response options for latter.	Scenario poses limited risk to the U.S. achieving its three Arctic goals. Russia's modernizing its Arctic capabilities, while reasonable given its age, poses the risk of dual use, which no one nation or coalition of nations can respond to.	U.S. may find itself further behind the world with respect to its Arctic capabilities. As a non-signatory of the *Agreement* effects on the U.S. could be similar to UNCLOS, where the U.S. finds itself on the outside.	Russia blockades the Arctic in order to maintain military security and drills in waters outside their EEZ, however, the chance of this scenario playing out is considered very unlikely (<10%). The U.S. is dependent on other nations for its Arctic security.
Benefits	Russia, China and others investments in the Arctic allows the U.S. to address more serious homeland security issues affecting the nation. These countries make the big upfront investments in the Arctic; the U.S. can learn and invest at a time of its choosing, learning from their missteps and achieve similar results for less money.	U.S. achieves its three Arctic goals without major investments in the Arctic. Allows the U.S. to focus on more pressing issues.	U.S. achieves it three Arctic goals and as in the other scenarios, allows the U.S. to focus on other issues–homeland security, infrastructure, etc.	Should this scenario play out, this could revitalize U.S. defense industry as it develops Arctic capabilities to respond to this crisis. Until such time, the U.S. can focus on other issues.

1. New Spice Route Outcome

This scenario along with the next two is the most promising for the U.S. to achieve its three Arctic goals. From a monetary perspective, the U.S. expends nothing in the way of public or private funds. Russian, Chinese, and European companies, backed by their governments, explore new ventures in the Arctic–a big risk, which could yield an even bigger benefit. On the surface, Russia's assistance with getting goods through the Arctic appears as a win-win for them, and businesses and consumers of those goods. However, if the U.S. does not develop or expand its Arctic capabilities and infrastructure, Russia's initiative in the Arctic, could potentially lead to Russia supporting cargo movement to countries favorable to it while forcing others to seek alternate more costly routes.

Similarly, the Russia-China floating island city agreement is a win for everyone using the Arctic and costs the United States nothing. While international Search and Rescue agreements require vessels to respond to those in distress, the Arctic's vast distances, harsh environment, and limited communication and infrastructure makes these challenging if not impossible operations. Denmark and Canada's economy and citizens depend in part on the Arctic; both countries see great potential and benefit from these floating islands. This good can quickly become a threat to the U.S. should Russia decide to militarize their floating island cities. Should this happen, the U.S. response options are limited and it will seriously jeopardize its ability to protect its national interest and ensure freedom of the seas.

The biogas movement is a win for energy development, energy security, and the environment. Instead of viewing the release of methane gas into the environment as a fait accompli with no viable solution, others took up the challenge and found a way to harness this energy source. As in the two previous areas, this comes at no cost to the U.S. however, it puts the country's energy program and indirectly the nation's national interests at risk due to its limited energy diversity as well as lower gas prices that could influence gas fracking. Globally, this could slow the transition to renewable energy as lower gas prices make gas a cheaper option than renewable energy.

A benefit to inaction by the U.S. is it allows others to address these issues to include homeland security concern. While the U.S. citizens may remain safe, avoiding costly technologies and capabilities with limited applications could hurt the U.S. in other ways. Viewed today as the world's leader in innovation, leadership and solving hard problems (e.g., putting a man on the moon), avoiding the Arctic because it is too costly, too far, not an issue for the lower 48 states puts all of this into jeopardy.

2. Arctic Renaissance Outcome

Although this scenario allows the U.S. to achieve its three Arctic goals, it comes with a certain amount of risks. Russia's reasons for modernizing its Arctic capabilities and infrastructure on the surface seem reasonable, however, no one country or coalition of countries is able to match Russia's Arctic capabilities should their motives turn from peaceful to confrontational and hinder freedom of the seas.

The U.N. rejection of Russia's territorial claims on the one hand is good for the environment as it limits Arctic exploration and the potential for catastrophic disaster should an oil spill occur in the Arctic. However, will there come a time when Russia ignores the U.N. ruling and begins exploration in non-EEZ waters? Would this cause its partner companies to back out of their drilling and mining agreements siding with the U.N. ruling and maintaining the rule-of-law over profits? What if any retaliatory actions would Russia take against these companies and their governments?

Canada's unilateral acceptance of the U.S. position on the Beaufort Sea is in the eyes of most experts as more beneficial to the U.S. That said, Canada does not come away empty handed, but can at its time and choosing start mining and drilling in this previously disputed area. The U.S. has territorial disputes involving The Bahamas, Marshall Islands, Russia, and Cuba who may follow Canada's lead and accede to the U.S. position in order to move forward with their national plans and not wait for the U.S. to come to the negotiation table to hammer out an agreeable solution.[220]

[220] CIA, "Field Listing – Disputes – International," *The World Factbook,* accessed November 20, 2017, https://www.cia.gov/library/publications/the-world-factbook/fields/2070.html.

As in the first scenario, the costs associated with this scenario are not monetary, but rather to U.S. credibility and willingness to compromise and work with other nations on reaching a mutually beneficial solution. The scenario leverages cooperation and trust not conflict and doubt. This level of trust and cooperation is nothing new. Following the end of the Cold War, 34 countries signed onto the Open Skies Treaty considered the "most wide-ranging international arms control efforts to date to promote openness and transparency in military forces and activities."[221] The Open Skies Treaty is a low cost, low risk treaty with high benefits. Russia views the Arctic as a region with great strategic importance and this scenario gets them out in front of the U.S. bringing with them others interested in the region but unable to do so with their limited resources.

3. Sochi Agreement Outcome

The monetary costs for this scenario are negligible; however, this scenario is not without its costs. Russia's ability to broker this agreement between Arctic and non-Arctic countries reflects Russia's political influence to unite disparate countries around their interests for the Arctic versus the U.S. or those of the Arctic Council. If this *Agreement* proves successful, other countries will certainly sign on to it, creating what Espen Barth Eide warned about, others starting their own club.[222] The Warsaw Pact was an attempt by the then former Soviet Union to control Central and Eastern Europe following War World II from 1954 to 1991. Russia's attempt to control the Arctic could have worldwide implications, should it impose heavy tolls, fees, or restrictions for transit through the Arctic by non-Sochi members. The latter could prevent the U.S. from ensuring freedom of the seas.

Impacts to national interests and protecting the homeland are minimal for this scenario. Six countries joined Russia to form this *Agreement*, which focuses on exclusively on the Arctic. In the future, other countries may join this *Agreement,* but again the focus is on Arctic specific issues–trade, commerce, development, etc. It is

[221] U.S. Department of State, "Treaty on Open Skies," accessed October 29, 2017, https://www.state.gov/t/avc/cca/os/index.htm.

[222] Morten Brugård, "Norway says yes to China in Arctic Council."

common for countries to sign on to regional agreements in order to advance their goals and aims some include: Association of Southeast Asian Nations, European Union, African Union, or Organization of American States. Still others sign on to specific issue such Paris Agreement (Climate), Ottawa Treaty (Anti-personnel mines), Geneva Conventions (treatment during armed conflict), and others. Should Russia's actions turn from one of cooperation to hostility, signatories of the *Sochi Agreement* are likely to suspend their *Sochi* obligations in order to maintain a peaceful Arctic.

Russia's pursuits in the Arctic outpace all other Arctic nations combined in size and scope. This scenario suggests now is the time for the U.S. to start revitalizing its Arctic capabilities and infrastructure. This is especially true given the long lead-time to develop and build in the Arctic. I would argue these projects need not be on the scale and scope of the five Russia has underway, but substantial to convey a strategic message to Russia and the world on the U.S. interests to maintain a peaceful Arctic.

4. Arctic Russian Bear Outcome

Of the four scenarios, this scenario poses the greatest danger to the United States driven by three factors–decision, indecision, and misinterpretation. Decisions made by the United States to focus on more pressing threats, while at the time provided the greatest benefit with minimal risk, created vulnerabilities in the Arctic. Indecision by policymakers for failing to call Russia's bluff earlier or thinking action by U.S. will make a bad situation worse. Finally, U.S. decision makers' misinterpretation of Russia's true intentions by failing to recognize or refusing to believe the facts and their strategic importance.[223] As in the previous scenarios, the monetary costs to do nothing are negligible, but doing so negatively affects the United States' three national Arctic goals.

The U.S. strategic and conventional forces have protected its citizens, homeland, and national security interests. However, as this scenario unfolds, the U.S. and its allies have limited military options to counter Russia's Arctic blockade and any follow-on actions they may pursue. As depicted in the scenario, economic sanctions have limited

[223] Peterson, *Soviet Military Objectives in the Arctic Theater and How They Might Be Obtained*, 18-22.

impact given Russia's current econoic situation and diplomatic sanctions would play well in the press, but again with little or no affect to alter Russia's strategic plan.

Should the blockage materialize, freedom of the sea through the Arctic is impossible without military or diplomatic action. On both of these, the U.S. lacks an effective means to alter Russia's plans. Militarily, the U.S. has limited forces and equipment to operate in the Arctic and respond appropriately to Russia's blockade. Although the U.S. could appeal to the United Nations, expel Russian diplomats, and enact other diplomatic measures, without knowing Russia's intentions, these actions seem counterproductive and could extend rather than resolve the current situation. While it may seem an unlikely scenario, could the Arctic turn into another Ukraine or Syria, where Russia exploits the U.S. Arctic policy and finds itself "one step ahead of the West"?[224]

B. CONCLUSIONS

The Arctic presents the U.S. with many challenges and opportunities. One might call the strategic patience and persistence strategy, a strategy of restraint. The challenge is not always rushing in to the sound of guns, but rather waiting until the conditions are right for action. An opportunity for the U.S. to "recognize its limitations, conserve resources" and encourage "cooperative security" by allowing its allies to perform a greater role in their security.[225]

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[224] Sergunin, "Is Russia Going Hard or Soft in the Arctic" and David J. Kramer, "U.S. foreign policy comes home to roost with Russia's action in Ukraine," *Washington Post,* March 1, 2014, accessed October 29, 2017, https://www.washingtonpost.com/opinions/us-foreign-comes-home-to-roost-with-russias-action-in-ukraine/2014/03/01/10be38bc-a18d-11e3-b8d8-94577ff66b28_story.html?utm_term=.dd24175d114f; Martin Hurt, "Preempting Further Russian Aggression Against Europe: Acceptance of Russia's aggression in Europe will only invite more," *2016 Index of Military Strength,* accessed November 24, 2017, http://index.heritage.org/military/2016/essays/preempting-further-russian-aggression/.

[225] Barry R. Posen, "A New U.S. Grand Strategy," *Boston Review*, July 1, 2014, accessed November 6, 2017, http://bostonreview.net/us/barry-r-posen-restraint-grand-strategy-united-states.

VII. CONCLUSIONS AND RECOMMENDATIONS

A. WRAP-UP

Western strategists regarded the Arctic, as the "fourth wall" which enclosed Russia to the north and until recently believed containing Russia rested on geography and political power.[226] Russia viewed this not a wall to contain it, but one to overcome using technology (a fleet of icebreakers), economics (a pipeline from Siberia to Western Europe), changing climate (inaccessible regions available for human development), and evolving international laws (UNLCOS ratified in 1982, Arctic Council established in 1996, Ilulissat Declaration passed in 2008, and makes progress on the maritime dispute with Norway).[227]

Today, the West views the melting Arctic sea ice with one eye on its risks and the other on its rewards. The risks entail impacts to the environment, indigenous people, and the climate. The rewards are quicker shipping routes, new areas for offshore oil and gas, natural resource development, tourism, and more, albeit private rewards winning out over social costs. Russia sees this as an opportunity to pivot away from Central Asia where it lost its foothold with the fall of the Iron Curtain and pursue a new course in the Arctic centered on four factors: foreign policy, military security, economic development, and transportation and maritime policy.[228]

Scientists with a very high level of confidence predict "an Arctic-wide ice loss is expected to continue through the 21st century, very likely (>90%) resulting in nearly sea ice-free late summers by the 2040s."[229] At the same time, others are calling on the USCG to buy four heavy icebreakers, with an average cost of $791 million and lifetime

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[226] Antrim, "The Russian Arctic in the Twenty-First Century," 110.

[227] Ibid., 116-119; Ilulissat Declaration commits the five Arctic coastal countries (Canada, Norway, Denmark, Russia and the U.S.) to resolve issues through diplomatic means.

[228] Antrim, "The Russian Arctic in the Twenty-First Century," 120-124.

[229] Taylor, P.C., W. Maslowski, J. Perlwitz, and D.J. Wuebbles, 2017: *Arctic Changes and their Effects on Alaska and the Rest of the United States*, 303; "Very high level of confidence" is defined as "Strong evidence (established theory, multiple sources, consistent results, well documented and accepted methods, etc.), high consensus."

costs in excess of $6.5 billion, in lieu of three heavy and three medium icebreakers given our restrained budget environment.[230] Given these and other uncertainties, the strategic patience and persistence strategy is a viable approach to pursue in the Arctic, which allows the U.S. to achieve its three national Arctic goals.

B. RECOMMENDATIONS FOR POLICY MAKERS

One of the key aspects to using scenarios is to identify signposts–external warnings or precursors–indicating a scenario becoming a reality.[231] The challenge within the Homeland Security and Defense realm is sorting through the immensity of data, evaluating its trustworthiness, and identifying its tipping point.

The signposts are in place for the New Silk Road as seen by the increase in maritime traffic through the Arctic. Policymakers need to ensure safe passage with minimal impact to the environment and indigenous people and to keep the Arctic arms free. The Arctic Renaissance signposts will be evident should Russia continue to expand its arctic capabilities, especially as the rate of melting Arctic ice increases. Their energy development initiatives within their EEZ will also be evident. Both would provide the U.S. an opportunity to collaborate instead of compete with Russia. The *Sochi Agreement* reflects a business practice of seeking a partner beneficial to all parties involved, resulting in a win-in-win for all parties. In this scenario, while the United States is on the sidelines, it should remain vigilant for unusual partnerships. Why is Russia reaching out to a long-standing adversary? Why would Canada and others agree to cooperate with the Russian's now, what can they gain from this agreement? While the United States may continue to hold fast remaining on the sidelines, it is in these nascent moments when U.S. policymakers should begin to question their hands-off policy and weigh the risks/benefits of joining these partnerships. Finally, the cost, lead-time, and uncertainty of the Arctic Russian Bear would require the United States to consider all facets of its decisions and

[230] Ben Werner, "Report: Coast Guard Should Focus on Buying Heavy Icebreakers," *USNI News,* November 20, 2017, accessed November 25, 2017, https://news.usni.org/2017/11/20/report-coast-guard-focus-heavy-icebreakers; National Academy of Science, *Acquisition and Operation of Polar Icebreakers: Fulfilling the Nation's Needs* (Washington, DC: The National Academy Press, 2017), DOI 10.17226/24834.

[231] Ralston and Wilson, *The Scenario-Planning Handbook,*167-168.

not just costs. In many ways, this is akin to the calculus undertaken today regarding actions against North Korea–are there any good options? A signpost U.S. policymakers should consider is using matching versus choice for their decisions: "at what price do other options become more attractive" versus "why should we do this?"[232]

Based on my analysis, U.S. policymakers should look for a few key low cost initiatives to operationalize the strategic patience and persistence strategy by doing the following:

- Make a small investment now in the Arctic, which would provide the U.S. a forward operating location (base or deep-water port) to respond to an accident or incident in the Arctic or deploy forces to counter Russia aggression.
- Build three deep-water ports in the Arctic in collaboration with Norway and Canada in order to improve its situational awareness on actions taking place in the Arctic, especially by Russia.
- Extend the service life of the remaining icebreakers to 2040 in lieu of building new medium and/or heavy icebreakers. By 2040, icebreakers should no longer be needed in the Arctic.
- Amend the Jones Act for the Arctic to allow non-US owned and operated ships to transport goods between U.S. ports through the Arctic. If successful, then the U.S. should collaborate with other Arctic nations who own and operate modern icebreakers (with less crew, lower carbon footprint, etc.) and newer ships capable of transitioning the Arctic without the need for an icebreaker escort.
- Ratify UNCLOS and pursue other diplomatic actions to solidify the U.S. relations with our key Arctic and non-Arctic partners.
- Build upon the limited exercises taking place in the Arctic–ICEX, Arctic Chinook, and others–in order to prepare the various Federal Departments and Agencies to respond to emerging issues (oil spill, stranded tourist vessel, blockade, treaty violation, etc.).

C. FUTURE RESEARCH / OPEN QUESTIONS

While the Arctic may remain an area of little conflict or of homeland security concerns for policymakers, nonetheless, the method used in this thesis could assist them

[232] Bradley DeWess, "What should we about North Korea? We may be thinking about it all wrong," *Washington Post,* September 10, 2017, B3.

in evaluating future policy decisions by exploring potential future scenarios versus predicting the future using traditional forecast tools and models. Researchers should consider using scenarios as a methodology as an alternative to the typical decision making process: define/analyze the problem, develop courses of actions (COA), analyze advantages/disadvantages, select the best COA, implement, test, and follow-up.[233]

In general, when there is a lot of uncertainty, as there is in the Arctic, low cost options are the best way to go. One keeps nearly all their powder dry and invests in a few selective projects that may yield many options or specific projects to protect the U.S. national goals. What are some projects in which the U.S. should invest, either alone, with a partner nation, or private entity?

For what others areas of national security should the U.S. adapt the strategic patience and persistence strategy–addressing pandemic diseases, monitoring and tracking all vessels (ships, trains, trucks) carrying hazardous cargo, conducting TSA-like screenings for commercial trains and buses?

Finally, an important area for research would be understanding what factors are the most important triggers to move policymakers out of strategic patience and persistence strategy to an active posture in the Arctic. What are the key signals U.S. policymakers should look for and what active steps should they pursue?

[233] Marjolein B.A. van Asselt, et al, *Foresight in Action – Developing Policy-Oriented Scenarios,* 22-24.

APPENDIX A. LIST OF NATIONAL ARCTIC POLICIES

1994 *Presidential Decision Directive/NSC-26–United States Policy on the Arctic and Antarctic Regions*	**2009 *National Security Presidential Directive 66/ Homeland Security Presidential Directive 25–Arctic Region Policy***	**2010 *National Security Strategy***	**2015 *National Security Strategy***	**2013 *National Strategy for the Arctic Region*– Lines of Effort (LOEs) 1 and 3 apply to this thesis**
Meeting post-Cold War national security and defense needs	Meet national security and homeland security needs relevant to the Arctic region	The United States is an Arctic Nation with broad and fundamental interests in the Arctic region, where we seek to meet our national security needs, protect the environment, responsibly manage resources, account for indigenous communities, support scientific research, and strengthen international cooperation on a wide range of issues.	**Confronting Climate Change**: The present day effects of climate change are being felt from the Arctic to the Midwest.	**LOE 1:** Advance U.S. Security Interests • Evolve Arctic Infrastructure and Strategic Capabilities • Enhance Arctic Domain Awareness • Preserve Arctic Region Freedom of the Seas • Provide for Future United States Energy Security
Protecting the Arctic environment and conserving its biological resources	Protect the Arctic environment and conserve its biological resources		**Air and Maritime Security:** [W]e seek to build on the unprecedented international cooperation of the last few years, especially in the Arctic as well as in combatting piracy off the Horn of Africa and drug-smuggling in the Caribbean Sea and across Southeast Asia	**LOE 3:** Strengthen International Cooperation • Pursue Arrangements that Promote Shared Arctic State Prosperity, Protect the Arctic Environment, and Enhance Security • Accede to the Law of the Sea Convention

1994 *Presidential Decision Directive/NSC-26–United States Policy on the Arctic and Antarctic Regions*	**2009 *National Security Presidential Directive 66/ Homeland Security Presidential Directive 25–Arctic Region Policy***	**2010 *National Security Strategy***	**2015 *National Security Strategy***	**2013 *National Strategy for the Arctic Region–* Lines of Effort (LOEs) 1 and 3 apply to this thesis**
				and Related Affairs
Assuring that natural resource management and economic development in the region are environmentally sustainable	Ensure that natural resource management and economic development in the region are environmentally sustainable		**Advance our Energy Security:** We will also stay engaged with global suppliers and our partners to reduce the potential for energy-related conflict in places like the Arctic and Asia.	
Strengthening institutions for cooperation among the eight Arctic nations	Strengthen institutions for cooperation among the eight Arctic nations (the United States, Canada, Denmark, Finland, Iceland, Norway, the Russian Federation, and Sweden)			
Involving the Arctic's indigenous peoples in decisions that affect them	Involve the Arctic's indigenous communities in decisions that affect them			
Enhancing scientific monitoring and research into local, regional, and global environmental issues	Enhance scientific monitoring and research into local, regional, and global environmental issues			

APPENDIX B. LINE OF EFFORT 1 AND SELECT PORTIONS OF LINE OF EFFORT 3 FROM IMPLEMENTATION FRAMEWORK FOR THE NATIONAL STRATEGY FOR THE ARCTIC REGION

Line of Effort 1: Advance U.S. Security Interests

Evolve Arctic Infrastructure and Strategic Capabilities

1.1 Prepare for Increased Activity in the Maritime Domain

Objective: Guide Federal activities related to the construction, maintenance, and improvement of ports and other infrastructure needed to preserve the mobility and safe navigation of United States military and civilian vessels throughout the Arctic region.

Next Steps: Create a coordinated approach toward improving and maintaining infrastructure in support of Federal maritime Arctic activities prioritized in consideration of national security, navigation safety, and stewardship of national resources. This coordinated approach will include:

1.1.1 Deliver a 10–year prioritization framework to coordinate the phased development of Federal infrastructure identified through a Department and Agency validated needs assessment by the end of 2016. **Lead: Department of Transportation (as Chair of the Committee on the Marine Transportation System)**

1.1.2 Develop recommendations for pursuing Federal public–private partnerships in support of the needs assessment and identified prioritized activities by the end of 2017. **Lead: Department of Transportation (as Chair of the Committee on the Marine Transportation System)**

1.1.3 Evaluate the feasibility of deepening and extending harbor capabilities in Nome, Alaska, and if the evaluation determines that navigation improvements are appropriate, begin planning efforts, including developing a construction timeline by 2020. **Lead: Department of Defense (U.S. Army Corps of Engineers)**

Supporting Agencies: Member departments and agencies of the Committee on the Marine Transportation System

1.2 Sustain and Support Evolving Aviation Requirements

Objective: Advance the stability, safety, and security of the aviation environment in the U.S. Arctic region.

Next Steps: The following deliverables will be pursued in accordance with the Federal Aviation Administration's baseline schedules and capital investment plan and through partnering with the State of Alaska:

1.2.1 Complete Automatic Dependent Surveillance–Broadcast (ADS–B) ground station deployments by the end of 2016. **Lead: Department of Transportation (Federal Aviation Administration)**

1.2.2 Continue conducting Wide Area Augmentation System (WAAS) improvements, including scheduled geo–satellite updates. **Lead: Department of Transportation (Federal Aviation Administration)**

1.2.3 Continue to coordinate with the State of Alaska to assess existing infrastructure, maintenance requirements, and navigational systems, and to identify opportunities to enhance safety and security including in rural or remote areas. **Lead: Department of Transportation (Federal Aviation Administration)**

Supporting Agencies: Department of Agriculture (Animal and Plant Health Inspection Service), Department of Defense, Department of Homeland Security, and Department of the Interior

1.3 Develop Communication Infrastructure in the Arctic

Objective: Support improvement to the telecommunication infrastructure and the use of new technology to improve communications in the region, including in areas of sparse population to facilitate emergency response.

Next Steps: The following deliverables will be pursued in coordination with the State of Alaska and Tribal communities in support of the National Strategy for the Arctic Region:

1.3.1 Create comprehensive assessment of the current and near–term communications needs of each key user group in Arctic Alaska, including: local communities; science; maritime; oil and gas; aeronautical; surveillance (weather/seismic); search and rescue; and other public/government service by end of 2016. **Lead: Department of Commerce (National Telecommunications and Information Administration)**

1.3.2 Develop a framework that lists and prioritizes opportunities for investments in telecommunications capacity and capability, with a strong emphasis on innovative technologies with Federal, State, Tribal, and international public–private partnerships by the end of 2017 that meets expected communications needs of key user groups in Arctic Alaska. **Lead: Department of Commerce (National Telecommunications and Information Administration)**

Supporting Agencies: Denali Commission, Department of Agriculture, Department of Commerce (National Oceanic and Atmospheric Administration), Department of Defense, Department of Homeland Security (U.S. Coast Guard), Department of the Interior, Department of State, Department of Transportation, Federal Communications Commission, and National Science Foundation

Enhance Arctic Domain Awareness

1.4 Enhance Arctic Domain Awareness

Objective: Increase Arctic domain awareness, with specific emphasis on Arctic maritime domain awareness, by improving appropriate capabilities to collect and exchange information by leveraging partnerships with all entities operating in the Arctic, including Federal, State, local, tribal, research, academia, industry, and international entities.

Next Steps: The following deliverables will be pursued in support of increasing Arctic domain awareness through the leveraging of partnerships:

1.4.1 Work with academia and industry to evaluate the costs and benefits of Unmanned Systems in the Arctic to collect ship tracking, meteorological, oil spill, and hydrographic data. **Lead: Department of Homeland Security (U.S. Coast Guard)**

1.4.2 Evaluate the feasibility of using Unmanned Aircraft Systems (UAS) to improve observational ability in the Arctic in coordination with the Federal Aviation Administration's ongoing efforts to safely integrate UAS into the national airspace system by the end of 2017 as defined in the UAS Comprehensive Plan. **Lead: Department of Homeland Security (U.S. Coast Guard)**

1.4.3 Continue to work with international partners toward enhancing Long Range Identification and Tracking (LRIT) system capability, including for the Arctic region. Publish a report by the end of 2017 which assesses progress on the use of LRIT to support increased Arctic awareness and navigational safety. **Lead: Department of Homeland Security (U.S. Coast Guard)**

1.4.4 Leverage relationships with international partners to improve national capacity to communicate and collect environmental data by satellite. Publish an assessment of current partnerships and capabilities with recommendations by the end of 2016. **Lead: Department of Commerce (National Oceanic and Atmospheric Administration)**

1.4.5 Leverage the Maritime Information Sharing Environment, developed as part of the National Maritime Domain Awareness Architecture, to develop the capability to receive information from diverse sources, analyze the information, and disseminate it to stakeholders. Publish a plan to establish a mechanism for information sharing for the Arctic by the end of 2017. **Lead: Department of Homeland Security (U.S. Coast Guard)**

1.4.6 Develop a timeline to enhance shared situational awareness across Federal, State, local, tribal, industry, non–governmental organizations, and international partners through broadly accessible enterprise information services, standardized information formats, and common data standards by the end of 2016. **Lead: Department of Homeland Security (U.S. Coast Guard)**

1.4.7 Evaluate space–based observation capabilities through participation in scheduled and future pilot programs to evaluate the feasibility of using space–based data and

publish results by the end of 2016. **Lead: Department of Defense (National Geospatial–Intelligence Agency)**

1.4.8 Enhance Automatic Identification System (AIS) capabilities, in alignment with current regulations, to facilitate identification and tracking of maritime assets across the Arctic region by the end of 2018. **Lead: Department of Homeland Security (U.S. Coast Guard)**

1.4.9 Participate in discussions focusing on Arctic information and data requirements through a variety of fora, including the navigation services community, to leverage multi–national and multi–agency capabilities. **Lead: Department of Homeland Security (U.S. Coast Guard)**

1.4.10 Increase understanding of potential threats to national security interests in the U.S. Arctic region and raise awareness of available safeguards through public–private partnerships, industry liaison platforms, and information sharing initiatives with Federal, state, local, and Tribal stakeholders. **Lead: Department of Justice (Federal Bureau of Investigation)**

1.4.11 Collaborate with industry, academia and government entities to identify vulnerable critical infrastructure, sensitive information and technologies, and to lead efforts to prevent loss or exploitation. **Lead: Department of Justice (Federal Bureau of Investigation)**

Supporting Agencies: Department of Commerce (National Oceanic and Atmospheric Administration), Department of Defense, Department of Homeland Security (U.S. Coast Guard), Department of State, Department of Transportation (Federal Aviation Administration), National Aeronautics and Space Administration, and National Maritime Intelligence–Integration Office

Preserve Arctic Region Freedom of the Seas

1.5 Sustain Federal Capability to Conduct Maritime Operations in Ice–Impacted Waters

Objective: Ensure the United States maintains ice–breaking ship capability with sufficient capacity to assure Arctic maritime access, support U.S. interests in the Polar Regions, and facilitate research that advances the fundamental understanding of the Arctic.

Next Steps: Develop long–term plans to sustain Federal capability to physically access the Arctic with sufficient capacity to support U.S. interests in the Arctic. Next steps include:

1.5.1 Finalize operational requirements and accelerate the acquisition production activities of a new U.S. Coast Guard heavy icebreaker to begin production activities in 2020. **Lead: Department of Homeland Security (U.S. Coast Guard)**

1.5.2 Continue planning for construction of additional icebreakers to achieve a capacity for year–round access in the Arctic**. Lead: Department of Homeland Security (U.S. Coast Guard)**

1.5.3 Submit funding plans for the icebreakers through the regular annual budget process. **Lead: Department of Homeland Security (U.S. Coast Guard)**

Supporting Agencies: Department of Commerce (National Oceanic and Atmospheric Administration), Department of Defense, Department of State, Department of Transportation, and National Science Foundation

1.6 Promote International Law and Freedom of the Seas

Objective: The United States will continue to promote freedom of the seas and global mobility of maritime and aviation interests for all nations in accordance with international law. The United States will promote and conduct such activities in the Arctic region as appropriate.

Next Steps: The United States will exercise internationally recognized navigation and overflight rights, including transit passage through international straits, innocent passage through territorial seas, and the conduct of routine operations on, over, and under foreign exclusive economic zones, as reflected in the Law of the Sea Convention. Toward this end, the U.S. Government will, as appropriate:

1.6.1 Conduct routine Arctic maritime exercises, operations, and transits consistent with international law. **Lead: Department of Defense**

1.6.2 Document U.S. diplomatic communications in the *Digest of U.S. Practice in International Law* published by the Department of State. **Lead: Department of State**

1.6.3 Document the Department of Defense report on fiscal year freedom of navigation operations and other related activities conducted by U.S. Armed Forces. **Lead: Department of Defense**

1.6.4 Deliver strategic communications at appropriate opportunities to reflect U.S. objections to unlawful restrictions in the Arctic on the rights, freedoms, and uses of the sea and airspace recognized under international law; and to promote the global mobility of vessels and aircraft throughout the Arctic region consistent with international law. **Lead: Department of State**

Supporting Agencies: Department of Defense, Department of Homeland Security (U.S. Coast Guard), and Department of State

Provide for Future United States Energy Security

1.7 Pursue the Development of Renewable Energy Resources

Objective: Promote development and deployment of available renewable energy resources in the U.S. Arctic region, such as wind, wave, and solar energy, to support local and regional energy security for remote Alaska communities and Federal facilities through collaboration with local and regional stakeholders, leveraging private sector investments, and exploring potential public–private partnerships.

Next Steps: Explore and develop strategies to employ renewable energy resources to support energy development, energy security, and affordable energy reliability requirements of Federal, State, and Tribal entities through the following activities:

1.7.1 Advance development and improvement of energy systems, such as the Department of Energy Alaska Strategic Technical Assistance Response Team (START) Program and the Department of the Interior Remote Community Renewable Energy Partnership, in remote Arctic communities by the end of 2018. **Lead: Department of Energy**

1.7.2 Accelerate efforts by remote Alaskan communities to adopt sustainable energy strategies through execution of *The Remote Alaskan Communities Energy Efficiency Competition* by the end of 2019. **Lead: Department of Energy**

1.7.3 Expand investment in climate solutions for remote Arctic communities through the Clean Energy Solutions for Remote Communities (CESRC) program by the end of 2016. **Lead: White House Office of Science and Technology Policy**

1.7.4 Promote deployment of clean energy and energy efficiency projects for the installation of facility and community–scale clean energy and energy efficiency projects**. Lead: Department of Energy**

1.7.5 Encourage private investment in renewable energy through facilitated workshops with community financing leaders, investors, and lending institutions (such as the 2015 Solarize Alaska Project) to examine technology advancements, financing models and methods to leverage private investment. **Leads: Department of Energy and Department of Agriculture**

1.7.6 Execute a Memorandum of Understanding with the Alaska Energy Authority to enhance new and existing energy systems in remote Alaska Native villages by the end of 2016. **Lead: Department of Energy**

1.7.7 Assist power providers in lowering energy costs for families and individuals within the Arctic region through programs like the competitive National Rural Utilities Service High Energy Cost grants and measuring results by the end of 2020. **Lead: Department of Agriculture**

1.7.8 Support the improvement of electric infrastructure in rural and remote villages in the Arctic Alaska through the issuing of loans and grants (such as the Department of Agriculture Rural Utilities Service High Energy Cost grants) and measuring results. **Leads: Department of Agriculture and Denali Commission**

1.7.9 Facilitate and monitor bulk fuel facilities in the Arctic through grants provided by the Denali Commission in conjunction with the Trans–Alaska Pipeline Liability Fund. **Lead: Denali Commission**

1.7.10 Conduct an analysis to evaluate the potential for net benefits of creating a National Arctic Energy policy to facilitate and advance National security, develop U.S. foreign policy, and meet regional and local energy needs. **Lead: Department of Energy**

Supporting Agencies: Department of Agriculture, Department of Homeland Security, Department of the Interior, and National Science Foundation

1.8 Ensure the Safe and Responsible Development of Non–Renewable Energy Resources

Objective: Ensure safe and responsible exploration and development of onshore and offshore Arctic non–renewable energy resources in an environmentally sound manner.

Next Steps: The development of all energy resources must be coupled with a coordinated responsible approach, domestically and internationally, which will be pursued through the following activities:

1.8.1 Plan and conduct exploratory deep–water baseline benthic assessments. **Lead: Department of the Interior (Bureau of Ocean Energy Management)**

1.8.2 Obtain and evaluate scientific and technical data to support the Targeted Leasing Approach for potential future offshore leasing. **Lead: Department of the Interior (Bureau of Ocean Energy Management)**

1.8.3 Continue to encourage the development and improvement of technology to capture hydrocarbons in response to an oil spill, including the loss of well control. **Lead: Department of the Interior (Bureau of Safety and Environmental Enforcement)**

1.8.4 Evaluate and promote spill prevention technology involved in the drilling process, wellbore integrity, production operations, and final well plugging and abandonment. **Lead: Department of the Interior**

Supporting Agencies: Department of Commerce (National Oceanic and Atmospheric Administration), Department of Energy, Department of the Interior

Line of Effort 3: Strengthen International Cooperation

Pursue Arrangements that Promote Shared Arctic State Prosperity, Protect the Arctic Environment, and Enhance Security

3.2 Enhance Arctic Search and Rescue

Objective: Reduce risk, enhance international cooperation, and increase capacity with respect to Arctic search and rescue by implementing the *Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic.*

Next Steps: Continue to strengthen search and rescue (SAR) preparedness efforts and support international SAR agreements relevant to the Arctic region. Next steps include:

3.2.1 Lead an international Arctic SAR deployment exercise during the U.S. Arctic Council Chairmanship. **Leads: Department of Homeland Security (U.S. Coast Guard), Department of Defense, and Department of State**

3.2.2 Develop a comprehensive understanding of national, state, regional, and, through Arctic Council coordination, international SAR resources potentially available in the region by the end of 2017. **Lead: Department of Homeland Security (U.S. Coast Guard)**

Supporting Agencies: Department of Commerce (National Oceanic and Atmospheric Administration), Department of Defense, Department of State, and Department of Transportation

Accede to the Law of the Sea Convention and Related Affairs

3.9 Accede to the Law of the Sea Convention

Objective: Continue to seek the Senate's advice and consent to accede to the Law of the Sea Convention.

Next Step:

3.9.1 Pursue accession to the Law of the Sea Convention and continue to seek Senate advice and consent to accession as a top Administration priority. **Lead: Department of State**

Supporting Agencies: Department of Commerce (National Oceanic and Atmospheric Administration), Department of Defense, Department of Homeland Security, Department of the Interior, and Department of Transportation

3.11 Resolve Beaufort Sea Maritime Boundary

Objective: Work toward a maritime boundary in the Beaufort Sea that is agreed to by the United States and Canada.

Next Steps: Assuming a willingness of the Canadian Government to pursue maritime boundary negotiations, next steps in this process include:

3.11.1 Undertake careful legal and technical review of issues relating to a potential boundary agreement (on–going). **Lead: Department of State**

3.11.2 Consult with State of Alaska and full range of other partners and stakeholders. **Lead: Department of State**

3.11.3 Undertake bilateral technical work with Canada that would underpin a potential boundary agreement. **Lead: Department of State**

3.11.4 Embark on negotiations with Canada on a potential boundary agreement. **Lead: Department of State**

Supporting Agencies: Department of Commerce (National Oceanic and Atmospheric Administration), and Department of the Interior (U.S. Geological Survey)

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