THE PURPOSE OF CHINESE ICEBREAKERS IN THE ARCTIC

A thesis presented to the Faculty of the U.S. Army
Command and General Staff College in partial
fulfillment of the requirements for the
degree

MASTER OF MILITARY ART AND SCIENCE
Strategic Studies

by

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Fort Leavenworth, Kansas
2018

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. REPORT DATE *(DD-MM-YYYY)*	**2. REPORT TYPE**	**3. DATES COVERED** *(From - To)*
15-06-2018	Master's Thesis	AUG 2017 – JUN 2018

4. TITLE AND SUBTITLE

The Purpose of Chinese Icebreakers in the Arctic

5a. CONTRACT NUMBER

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)

William F. Carey Jr.

5d. PROJECT NUMBER

5e. TASK NUMBER

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

U.S. Army Command and General Staff College
ATTN: ATZL-SWD-GD
Fort Leavenworth, KS 66027-2301

8. PERFORMING ORG REPORT NUMBER

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)

10. SPONSOR/MONITOR'S ACRONYM(S)

11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION / AVAILABILITY STATEMENT

Approved for Public Release; Distribution is Unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

The Arctic is home to much of the world's undiscovered resources, including rare minerals, oil, and natural gas. Climate change and the resulting receding ice within the region is starting to uncover new opportunities for resource exploitation and improved trade routes. The People's Republic of China sees economic prosperity and resources as being necessary to secure their current government model. They rely heavily on imported resources from the Middle East. Multiple chokepoints along current navigable routes, coupled with piracy and the instability associated with the Middle East has led China to seek new opportunities through cooperation with new partners. The Arctic region is comprised of the eight Arctic countries whose boarders fall within the Arctic region. China is not an Arctic state, but has recently acquired permanent observer status on the Arctic Council, the leading form of regional governance in the Arctic. By taking a leading role in areas of scientific research and navigational safety, while simultaneously partnering with Arctic states and the indigenous people, China has successfully established itself within the Arctic region. Its icebreakers are the strategic cornerstone in achieving its interests in the Arctic.

15. SUBJECT TERMS

China, Icebreaker, Arctic, Arctic Trade Routes, Arctic Resources, Arctic Governance

16. SECURITY CLASSIFICATION OF:			**17. LIMITATION OF ABSTRACT**	**18. NUMBER OF PAGES**	**19a. NAME OF RESPONSIBLE PERSON**
a. REPORT	**b. ABSTRACT**	**c. THIS PAGE**			**19b. PHONE NUMBER** *(include area code)*
(U)	(U)	(U)	(U)	88	

Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std. Z39.18

MASTER OF MILITARY ART AND SCIENCE

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The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

ABSTRACT

THE PURPOSE OF CHINESE ICEBREAKERS IN THE ARCTIC, by Lieutenant William F. Carey Jr., 88 pages.

The Arctic is home to much of the world's undiscovered resources, including rare minerals, oil, and natural gas. Climate change and the resulting receding ice within the region is starting to uncover new opportunities for resource exploitation and improved trade routes. The People's Republic of China sees economic prosperity and resources as being necessary to secure their current government model. They rely heavily on imported resources from the Middle East. Multiple chokepoints along current navigable routes, coupled with piracy and the instability associated with the Middle East has led China to seek new opportunities through cooperation with new partners. The Arctic region is comprised of the eight Arctic countries whose boarders fall within the Arctic region. China is not an Arctic state, but has recently acquired permanent observer status on the Arctic Council, the leading form of regional governance in the Arctic. By taking a leading role in areas of scientific research and navigational safety, while simultaneously partnering with Arctic states and the indigenous people, China has successfully established itself within the Arctic region. Its icebreakers are the strategic cornerstone in achieving its interests in the Arctic.

ACKNOWLEDGMENTS

This thesis was written during academic year 2018 while attending the Command and General Staff College in Fort Leavenworth, Kansas. This has been possible only by the valuable input of my committee members and by the opportunity of working with them on this thesis. It has been a pleasure to do so. This thesis is dedicated to my wife and daughter. Your patience and support throughout the long process is greatly appreciated.

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ACRONYMS

ATS	Antarctic Treaty System
DIME	Diplomacy, Information, Military, and Economic
EEZ	Exclusive Economic Zone
LNG	Liquified Natural Gas
NEP	North East Passage
NSR	Northern Sea Route
NWP	North West Passage
PRC	People’s Republic of China
UNCLOS	United Nations Convention on the Law of the Sea
WTO	World Trade Organization

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CHAPTER 1

INTRODUCTION

> The Arctic belongs to all the people around the world, as no nation has sovereignty over it . . . China must plan an indispensable role in Arctic exploration as we have one-fifth of the world's population.[1]
>
> —Yin Zhuo, *Journal of Military and Strategic Studies*

> Speaking about the North Pole, it's obvious that its significance is not limited by scientific research only. Now it is called a "global construction site." What does this mean? It means that economic activities they are not clearly described by the international agreements. So, the one who starts first will most likely ensure one's advantages for the future. As we know, the planet's resources are limited. This means it's impossible to run a blind eye to the natural deposits in the area of the North Pole. One can say, it's the [Middle East] of the future or the second [Middle East].[2]
>
> —Le Li, *Journal of Military and Strategic Studies*

Economic Expansion

Over the past 50 years, China has been on a steep and definitive journey toward economic expansion. Prior to 1978, China's economic expansion was an annual increase of 6 percent Gross Domestic Product or less. Then in 1978, economic reforms were introduced by Deng Xiaoping and in December of 1990, Shanghai reopened its stock markets for the first time since 1949. Between 1978 and 2012, China has become an industrial giant and has enjoyed an impressive annual average Gross Domestic Product growth rate of 9.4 percent. A major milestone in China's economic growth was December 11, 2001 when it joined the World Trade Organization (WTO). Now, China is the second largest economy in the world.[3]

To achieve such staggering growth rates, requires a tremendous amount of resources. China currently has the world's most aggressive domestic mining industry to

extract coal and other mineral resources. As local mines dry up, China must look globally to supply their country's growth needs.[4] China is also the largest net importer of crude oil, bringing in 7.6 million barrels per day during 2016.[5] With an ever-growing population and a constant demand for more resources, China has had to expand their reach beyond their borders to continue economic growth.[6]

Problem Statement

The Arctic ice is retreating due to climate change and the Northern Sea Route (NSR) is becoming more navigable, potentially offering a significantly shorter trade route between East Asia and Northern Europe. The Arctic also houses some of the world's largest deposits of valuable, untapped, resources such as oil and natural gas. While the United Nations Convention on the Law of the Sea (UNCLOS) can be used as a model to divide the rights to these resources amongst the Arctic States, the Arctic Council, as the governing body within the region, has taken a looser position on the rights to research and exploit resources within the region. As a result, there are many ongoing disputes pertaining to the rights of access to Arctic resources. Despite the fact China is not considered an Arctic State, it has made significant progress toward establishing itself as a major player within the region by successfully obtaining permanent observer status on the Arctic Council. China is also a major potential user of the NSR and has partnered with Arctic states to perform various types of research within the region.

Navigable trade routes along the NSR and the extraction of Arctic resources have one thing in common, neither economic goal is fully obtainable without the aid of icebreaker ships. These two major economic drivers have fueled the Arctic interest of several countries and seven of the eight Arctic states have icebreaker ships in their

current inventory. All have plans to build more. Joining this surge, China has also taken recent, and aggressive, steps towards the expansion of its current icebreaker ship inventory. China's heightened interest in the region, possibly solidified by its plans to build icebreakers, could potentially lead to armed conflict over competing economic goals within the Arctic.

Research Question

What strategic purposes does China's new icebreaker ship building program support in the Arctic region? To successfully answer this question, one must first uncover the history of Chinese icebreakers and acknowledge their current usage in the Arctic, Antarctica, and other ice-covered regions. Another question that must be answered, in support of this thesis, is what resources exist in the Arctic and are they recoverable by China now, or potentially at a later date? Finally, the last questing that must be answered to determine the purpose of China's new icebreaker ship building program is what other purpose could Chinese icebreakers serve, such as keeping new navigational trade routes open within the Arctic? To answer this question, one very important assumption must be made, that China will continue on its path toward diplomatic, informational, military, and economic expansion in pursuit of becoming a leading world power.

Definitions

Arctic Council

The Arctic Council is a leading form of governance at the regional level within the Arctic. The eight states that are included as members to the council include: Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden, and the United States. All eight

members have territory located within the Arctic Circle; Denmark is considered a member due to its state-owned territory of Greenland and the Faroe Islands.[7] In addition to the eight-member states, there are six permanent participant organizations that represent the indigenous people of the Arctic. They include the Aleut International Association, the Arctic Athabaskan Council, Gwich'in Council International, the Inuit Circumpolar Council, Russian Association of Indigenous Peoples of the North, and the Saami Council. Permanent participants receive active participation rights and full consultation to the council. Finally, a large group of permanent observers exists within the Arctic Council. These 13 permanent observers are made up of states whose borders fall outside of the Arctic Circle, but still wish to make relevant contributions toward Arctic issues. They do not have governing or voting rights, but may observe the work of the Arctic Council and participate through the various working groups. China is one of the 13 permanent observers and serves on multiple working groups. There are currently six working groups. They primarily perform research and development in areas concerning the environment.

UNCLOS

The UNCLOS has been locally used by many nations to define who owns the rights to resources within a country's exclusive economic zone (EEZ). Due to the fact that UNCLOS is not globally recognize as an agreed upon set of rules and regulations and because it is often open to interpretation, many disputes have arisen as a result. UNCLOS tries to neatly carve up the ocean along neighboring coasts by allocating who has the rights to fishing and drilling. However, what does UNCLOS say about who is responsible for environmental protection, pollution cleanup, and navigational safety?

Because issues pertaining to climate change and environmental protection and research are global issues that cross many regions, apparent flaws in UNCLOS's design have been highlighted. The ambiguity of UNCLOS is a distinct issue in future rules of the use of the Arctic as a waterway and for resource extraction.

Scope

All of China's icebreakers have been constructed during the post-Cold War period. With a strategic focus in mind, there will be some examples tied to the Cold War, but the majority of the data collected will be from 2010 to the present. This information will cover key topics on China, China's icebreaker ship-building program, Arctic resources and navigable routes, and China's relationship with the Arctic states, particularly Russia. A multitude of resources demonstrate how China is using diplomacy, information, and its military to project power around the world. Despite the fact that many of these areas overlap and interconnect, and that some examples within these areas are required to support this research, the main focus will dive into the economic requirements of power projection. There is plenty of documentation supporting Chinese economic expansion around the world. Examples will be given to support China's aggressive nature toward securing these resources, but will not be the focus of this research.

Limiting Factors

Due to the strategic and relatively undocumented aspect of this topic, previous research is limited. Additionally, the majority of this research will require an in-depth understanding on China's current strategic policies pertaining to its economic goals

within the Arctic. Some of this information is lacking and/or is possibly classified. Also, additional information surrounding this topic is written in Chinese. To help mitigate the inherent limitations associated with this research project, this thesis will be conducted in a quantitative fashion when material depth is unavailable and will comprise of Chinese documents that are translated to English when available.

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[1] Timothy Curtis Wright, "China's New Arctic Strategem: A Strategic Buyer's Approach to the Arctic," *Journal of Military and Strategic Studies* 15, no. 1 (2013): 1-37.

[2] Ibid.

[3] Tomas Hirst, "A Brief History of China's Economic Growth," WeForum, July 30, 2015, accessed September 20, 2017, https://www.weforum.org/agenda/2015/07/brief-history-of-china-economic-growth/.

[4] Vladimir Basov, "China is Burning Through its Natural Resources," Mining, April 26, 2016, accessed September 20, 2017, www.mining.com/china-burning-natural-resources/.

[5] Tyler Durden, "Where Does the World's Biggest Oil Importer Get Its Crude?" *Zero Hedge*, April 17, 2017, accessed September 20, 2017, https://www.zerohedge.com/news/2017-04-17/where-does-worlds-biggest-oil-importer-get-its-crude.

[6] Basov.

[7] Cheng Baozhi, "Arctic Aspirations," *Beijing Review* 54, no. 34 (August 2011): 14-15.

CHAPTER 2

LITERATURE REVIEW

Key Words

Key words used while searching the Fort Leavenworth's Ike Skelton Combined Arms Research Library's online database included: ("Arctic" or "Arctic region") and (China or Russia or Chinese or Russian) and (icebreaker or icebreakers or "northwest passage"). Other terms included in searches were: China, Icebreaker, Arctic, Arctic Trade Routes, Arctic Resources, and Arctic Governance.

Contribution

This research will expand upon China's new Arctic policy, released in late January of 2018, to better understand Chinese interests within the Arctic region. It will highlight global interests in the Arctic, including resource development and the use of trade routes, while also identifying key partnerships and roles of governance. Finally, this research will link China's use of its icebreaker ships as an inroad to a dominant leadership position within the Arctic region.

China's Arctic Policy

China released its first edition whitepaper on Arctic policy from the State Council Information Office of the People's Republic of China in January 2018. In this policy, China acknowledges the accelerated melting of sea ice in the Arctic, economic globalization and regional integration, and the Arctic growing strategically due to its economic value from natural resources and sea passages. China also highlights the Arctic for its potential in areas pertaining to scientific research and environmental protection.

China states that “the Arctic situation now goes beyond its original inter-Arctic States or regional nature, having a vital bearing on the interests of States outside the region and the interests of the international community as a whole, as well as on the survival, the development, and the shared future for mankind. It is an issue with global implication and international impacts.”[1] The new Chinese policy guides relevant Chinese government departments and institutions in Arctic-related activities and cooperation while encouraging relevant parties to get more involved in Arctic governance to promote peace and stability in, and the sustainable development of, the Arctic.[2]

While discussing the current Arctic situation, China states that there is no single comprehensive treaty on Arctic affairs. China recognizes the Charter of the United Nations, the UNCLOS, the Spitsbergen Treaty and other treaties and general international law as governing Arctic affairs at present. The policy acknowledges that States that exist outside of the Arctic region do not have territorial rights in the Arctic, but do have rights in respect of scientific research, navigation, overflight, fishing, laying of submarine cables and pipelines in the high seas and other relevant sea areas in the Arctic ocean, and the rights to resource exploration and exploitation in the Arctic, pursuant to treaties such as UNCLOS and general international law. It also states that Contracting Parties to the Spitsbergen Treaty enjoy the liberty of access and entry to certain areas of the Arctic to exercise and practice scientific research and commercial activities such as hunting, fishing, and mining.[3]

Because of its close proximity to the Arctic, China identifies itself as a “Near-Arctic State,” stating the natural conditions of the Arctic and their changes have a direct impact on China’s climate system and ecological environment. This, in turn, effects

China's economic interest in agriculture, forestry, fishery, marine industry and other sectors. China states environmental factors as one reason it has become closely involved in trans-regional and global issues in the Arctic, issues pertaining to climate change, the environment, and scientific research. Another reason for China's close involvement in the Arctic is due to economic factors. The utilization of shipping routes, resource exploration and exploitations, security, and global governance are all reasons why China's involvement in the Arctic has significantly increased. China calls for a cooperative initiative that will bring opportunities for parties concerned to jointly build a "Polar Silk Road" and facilitate connectivity and sustainable economic and social development of the Arctic.[4] China has performed a total of eight Arctic expeditions and is an active promotor of scientific research in the Arctic region and the building of icebreaker ships for scientific purposes.[5] China states the governance of the Arctic requires the participation and contribution of all stakeholders and wants to build the Arctic in a responsible way as a community with a shared future for mankind.[6]

China's Navy

Until recent years, China's People's Liberation Army Navy appeared not to be increasing its naval force, but simply modernizing its current inventory. This notion has now evolved as China is both modernizing and replacing its outdated platforms with more sophisticated weapon systems while simultaneously increasing the number of naval ships it currently owns and operates. China is taking long strides in modernizing its navy in both quality and quantity.[7]

Until 2008, China had only one ballistic missile submarine. By 2016, that number had grown to four. Before 2012, China had no aircraft carriers. In 2012, China fielded its

first aircraft carrier and currently has two more in production. Scholars predict that China plans to build more to establish a total force comprising of four to six aircraft carriers. Also, before 2014, China had no corvettes (light frigates). By November 2017, China had 37 corvettes in its inventory with a projected future force of 60 corvettes estimated by observers.[8] These are just a few examples of Chinese modernization. China's increase in military does not end with the Chinese navy, but extents itself across all military branches.

In addition to the revitalization of Chinese naval forces and increases to its ship inventory, the Chinese have spent significant resources toward developing a robust anti-access area denial defense network consisting of air force, maritime, and land-based weapon systems. This technology includes, and is not limited to, anti-ship ballistic and cruise missiles, capable of destroying an aircraft carrier operating within 1,000 nautical miles of Beijing. It provides security for China's mainland while protecting interests within the region.[9]

China's Icebreakers

Similar to the buildup of naval forces and the development of modernized capabilities, the number of Chinese icebreaker ships the China currently has in its inventory has increased as well. China currently has three icebreakers and one in production.[10] Their current polar icebreaker, the *Xue Long* (Snow Dragon), was built in the Ukraine in 1993 and is an asset of the Polar Research Institute of China. The Polar Research Institute of China is administratively a subset of the Chinese Arctic and Antarctic Administration. The Chinese Arctic and Antarctic Administration reports to the State Oceanic Administration who then ultimately reports to the Ministry of Land and

Resources.[11] The *Xue Long* has successfully conducted eight expeditions to the Arctic, completing its most recent in October of 2017.[12] A month later, it set sail for its 34th expedition to Antarctica.[13] The *Xue Long* has a total length of 167 meters, width of 23 meters, and a depth of 14 meters. Its full displacement is just over 21 thousand tons. The *Xue Long* has a maximum speed of 18 knots and a cruise radius of 20 thousand nautical miles. It has advanced navigation, positioning, automated piloting systems, and can accommodate two helicopters and has a hangar bay. The *Xue Long* can continuously break ice as thick as 1.1 meters (including .2-meter-thick snow) at 1.5 knots. On board the ship there are 200 square meters of lab space used to conduct scientific research in the areas of marine physics, marine chemistry and biology, and meteorology. It has a data processing center and is fitted with advanced apparatuses and equipment for ocean survey such as conductivity, temperature, and depth and Acoustic Doppler Current Profiling.[14]

Figure 1. The *Xue Long (Snow Dragon)* Chinese Icebreaker and Research Vessel

Source: Arctic Climate Change, Economy and Society (ACCES), "2012 Xue Long Cruise," accessed May 7, 2018, http://www.access-eu.org/en/publications/access_expeditions/xue_long_20122.html.

Recently, two non-polar icebreakers have been built domestically by China. The *Haibing 722* and the *Haibing 723* were both commissioned in 2016 and are military class icebreakers attached to the Northern Fleet of the People's Liberation Army Navy and have surveillance capabilities. They are charged with keeping the ports within the Bohai Sea free of ice, including the nuclear submarine shipyard at Huludao.[15] The *Haibing 772* is 337 feet long and, fully loaded, displaces 4,860 tons. It can resist hurricane force winds and has a range of 7,000 miles. Additionally, it has a landing pad suited for a Changhe Z-8 transport helicopter.[16]

The *Xue Long 2*, China's icebreaker that is currently in local production, will commission in 2019 and join its sister ship as a polar class icebreaker attached to the

Polar Research Institute of China. This polar class III vessel will be capable of breaking ice up to 1.5 meters thick in both forward and reverse, hold 90 scientists plus its crew, and have state-of-the-art scientific research equipment on board.[17]

China is currently outpacing the United States in its icebreaker ship capabilities. The United States currently owns and operates one medium polar icebreaker, the *USCGC Healy* and one heavy polar icebreaker, the *USCGC Polar Star*. The *Polar Star* is more capable of reaching the most remote polar locations, but is several decades old and will likely retire soon. Plans to build new icebreakers are in progress.[18]

Figure 2. The *Haibing 722* Military Class Icebreaker

Source: Kyle Mizokami, "China Launches a New Haibing 722 Icebreaker," *Popular Mechanics*, January 11, 2016, accessed May 8, 2017, https://www.popularmechanics.com/military/weapons/news/a18867/china-launches-new-icebreaker/.

Many scholars have discussed the future of Chinese polar vessels. On the topic of nuclear powered maritime vessels in the Arctic, Du Wenlong, a senior researcher of

China's People's Liberation Army Academy of Military Science, said: "Compared with ships that use conventional propulsion, nuclear-powered ships can travel farther and are more reliable, factors that make the ships a reasonable choice for polar expeditionary missions." Journalist Mark Halper reported that the Chinese state-owned China Shipbuilding Industry Corporation has received government funding to develop nuclear powered ships, and presumably the ships would be icebreakers.[19]

China's History in Antarctica

The Chinese icebreaker, *Xue Long*, has a long history of voyages to the South Pole for the purpose of conducting research and the transportation of scientists, supplies, and equipment to its permanent research stations.[20] China currently has four research stations in Antarctica with plans to build a fifth. One prominent station, Kunlun, sits atop Dome Argus or 'Dome A', 4,093 meters above sea level. It is among the highest elevation points in Antarctica and is currently gathering data in fields ranging from global climate change to the origin of the universe. Due to its high elevation, Kunlun can pull climate data from ice core samples dating back 1.5 million years.[21]

China's interest in Antarctica began in the 1950s during its "Pre-Reform Period" as an effort by the People's Republic of China (PRC) to receive global recognition as a legitimate government. China attempted to join the Antarctic Treaty System (ATS) but was denied due to Cold War geopolitics and United Nations recognition of the Republic of China as its legitimate government. Additionally, the PRC had no active presence of operations in Antarctica. During China's "Fight for Legitimacy Period" (1978 to 1989), their main focus in Antarctica was the pursuit of full membership in the ATS.[22]

From 1990 to 2005, China's main objectives during its "Consolidation, Capacity Building, and Cooperation Period" in Antarctica were to deepen its footprint on the continent, expand its scientific agenda, and learn from scholars and engineers of other ATS countries about how to conduct world-class scientific research. From 2005 to present, China has greatly increased the funding and manpower in Antarctica during its "Quest for Leadership Period." It has also engaged in ambition infrastructure projects to assert its role in Antarctic Governance.[23]

One scholar, Jonathan Harrington, describes the PRC, as a developing nation prior to 1979, not being capable of conducting significant research activities on Antarctica. Now, however, China is one of the largest contributors of environmental science and technology globally. Additionally, China's participation in various organizations and negotiations on the international stage have provided legal and institutional models globally and domestically. With its commission of the *Xue Long* polar icebreaker, establishment of multiple Antarctic research centers, and scientific contributions in Antarctica, China established itself as a legitimate leader in the science community. This signifies that China is a full participant in global environmental governance.[24]

China's History in the Arctic

China's interest in the Arctic became official in 1925 when it became a signatory to the Svalbard Treaty (discussed in a later section), but Chinese polar research did not begin until 1949 when the PRC starting focusing on Antarctica. Then, in the 1990s, China started paying closer attention to the Arctic as research into climate change suggested potential impacts on China's climate. China's first Arctic expedition was in 1999 and its engagement into Arctic affairs is mainly evidenced by the scientific research

they have completed in the region throughout the years. China recently completed its eighth trip.[25]

The main objective of Chinese expeditions into the Arctic have evolved over time. Initially, the focus was purely scientific research into climate change and the melting of sea ice.[26] Now, the focus has expanded into economic goals such as resources and trade routes, along with the social and political implications associated with these new Arctic goals.[27] China's most recent political success in the Arctic was in May 2012, when it was granted Permanent Observer status on the Arctic Council.[28]

Climate Change

In 2004, the Arctic Council and the International Arctic Science Committee jointly published "Impacts of a Warming Arctic" under the Arctic climate impact assessment project. It stated that over the past 30 years the annual average sea ice extent has decreased approximately 8 percent, an area larger than Norway, Sweden, and Demark combined, and the melting trend is accelerating. Sea ice is thinner in recent decades as well. Arctic-wide average thickness reduction is estimated at 10 to 15 percent with some areas showing reductions up to 40 percent between the 1960s and late 1990s. As a result, significant environmental and marine ecological challenges exist.[29] The Arctic is currently experiencing significant climate change and receding ice layers are clearing the way for new shipping routes. The United Nations Framework Convention on Climate Change lacks provisions that are specifically designed to protect the Arctic environment. Damage to the Arctic ecological environment is virtually irreversible and the need for stricter protection measures are required.[30] Challenges exist, but so do economic opportunities.

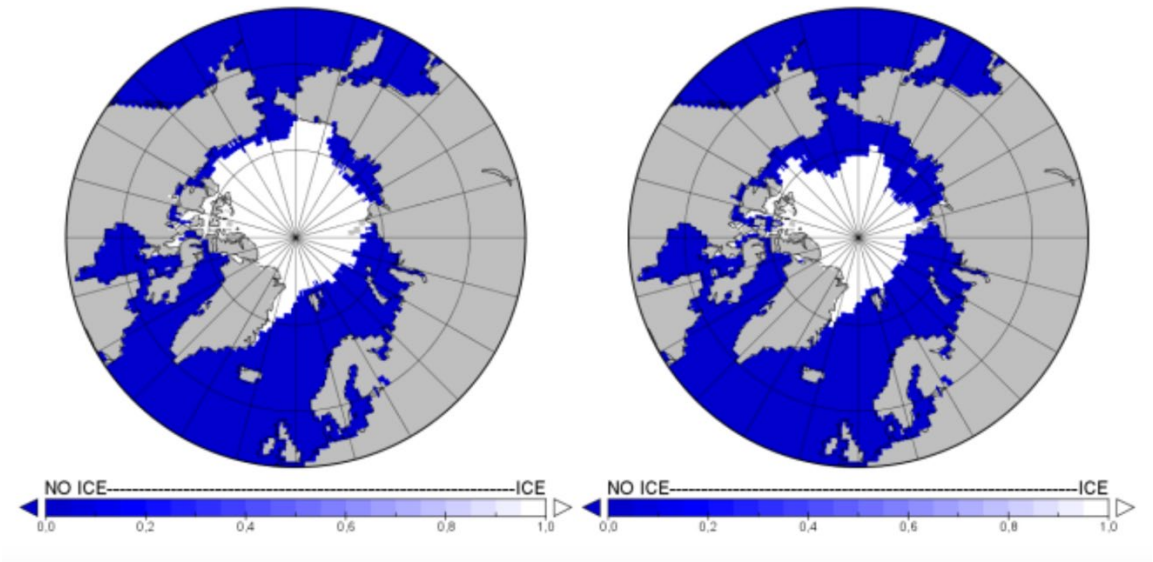

Figure 3. Average Change in Median Arctic Ice Extent for the Month of September

Source: Arctic Sea Ice Blog, "September Arctic Sea Ice Extent: 1935-2014," January 19, 2016, accessed May 30, 2018, http://neven1.typepad.com/blog/2016/01/september-arctic-sea-ice-extent-1935-2014.html.

Economic Opportunities

Arctic Resources

Arctic development continues to garner worldwide attention among states who border that region and states who do not. One of the main draws to the Arctic region is its abundance of resources.[31] In 1962, huge oil and gas fields were discovered in the Tazovskiy district of the Soviet Union which became a milestone of natural resource development in the Arctic.[32] Besides having an abundance of hydrocarbons (chief components of petroleum and natural gas) and mineral resources, the Arctic is home to 30 percent of the world's undiscovered gas and 13 percent of the world's undiscovered oil, nearly all of it which is offshore and in less than 500 meters of ocean water.[33] In

2008, the US Geological Survey published an article entitled “Arctic Resource Assessment: Circum-Arctic Resources Appraisal: Estimates of Undiscovered Oil and Gas North of the Arctic Circle” which stated that 22 percent of the world’s oil and natural gas could be located beneath the Arctic. The total untapped resources in the Arctic include 90 billion barrels of oil, 1,669 trillion cubic feet of natural gas, and 44 billion barrels of natural gas liquids. Of the resources listed, 84 percent are located in offshore areas. Of these offshore resources, 88 to 95 percent fall within one of the Arctic states’ 200 nautical mile EEZ.[34] When referring to these resources, China (no other major state has argued) stated about global commons that “extended continental shelf claims should not trench on the international seabed areas.”[35]

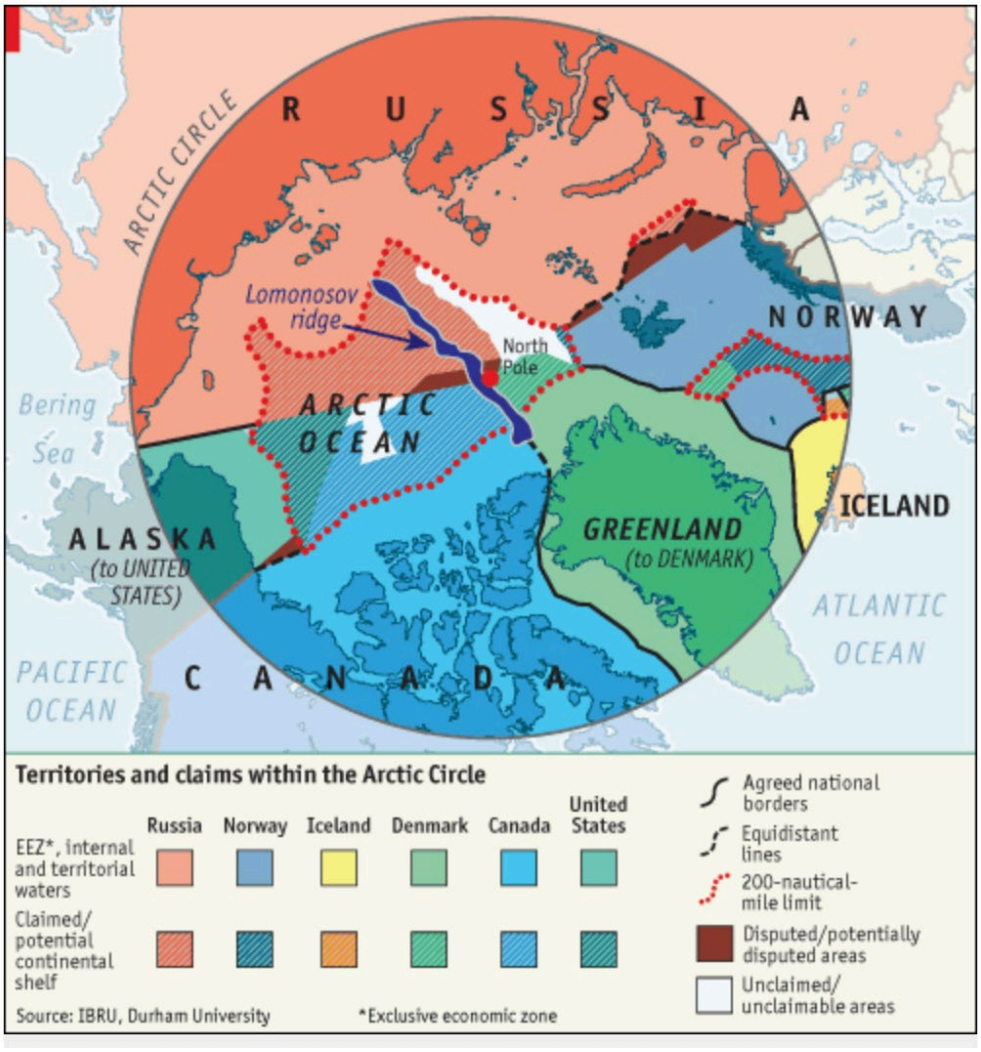

Figure 4. Arctic Exclusive Economic Zones and Disputed Claims

Source: Economist, "Suddenly, a Wider World below the Waterline," May 14, 2009, accessed May 30, 2018, https://www.economist.com/node/13649265.

Trade

From 1995 to 2015, Chinese exports of manufactured goods rose significantly in the global market. This was mainly a result of China joining the WTO in 2001.[36] Trade between China and the European Union grew during this time period and it continues to

grow today. Now, the European Union is China's number one trading partner, and China is the European Union's second largest trading partner after the United States.[37] In 2013, the European Union imported goods worth 386 billion dollars from China. That same year, China imported goods worth 204 billion dollars from the European Union.[38] Most scholars agree that a shorter route between China and Europe would be beneficial to China's trade industry.[39]

Figure 5. Rise in Chinese Exports Comparatively to 2001 (Year China Joined WTO)

Source: Mary Amiti, Mi Dai, Robert Feenstra, and John Romalis, "China's WTO Entry Benefits US Customers," *Vox,* June 28, 2017, accessed May 7, 2018, https://voxeu.org/article/china-s-wto-entry-benefits-us-consumers.

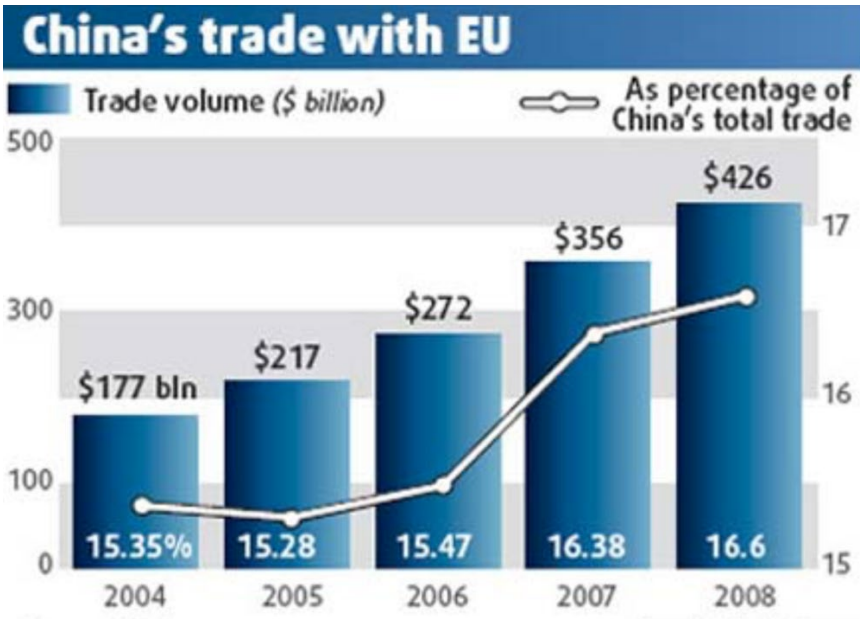

Figure 6. China and EU Trade Growth between 2004 and 2008

Source: People's Daily, "Chinese Delegation in Europe for Trade Promotion," accessed May 30, 2018, http://en.people.cn/90001/90778/90857/90861/6602020.html.

Figure 7. 2013 Trade Between China and European Union

Source: Ivana Kottasova, "What China's Xi Jinping wants from Europe," *CNN*, April 2, 2014, accessed May 30, 2018, https://www.cnn.com/2014/03/30/business/eu-china-trade-agreement/index.html.

Trade Routes

The Arctic is host to seasonal trade routes that include the NSR, the North West Passage (NWP), and the North East Passage (NEP). The NEP is the route that runs along Norway and Russia's Arctic coast, is comprised of the Barents Sea, and provides access to the port of Murmansk, Russia. The NWP goes through the Canadian Archipelago north of Alaska. A voyage from the port of Seattle to the port of Rotterdam in the Netherlands via the NWP saves 2,000 nautical miles and 25 percent of shipping cost as opposed to the traditional Panama Canal route. The NSR, encompasses the NEP but extends further across Russia's northern coast, is defined by Russian law as extending from the Novaya Zhelaniya Straits to Cape Dezhnev by the Bering Strait. The NSR was frequently used by shipping companies during the Soviet era hitting its peak in 1987 when 331 ships made over 1,306 voyages but has dropped off significantly to near-zero until recently.[40]

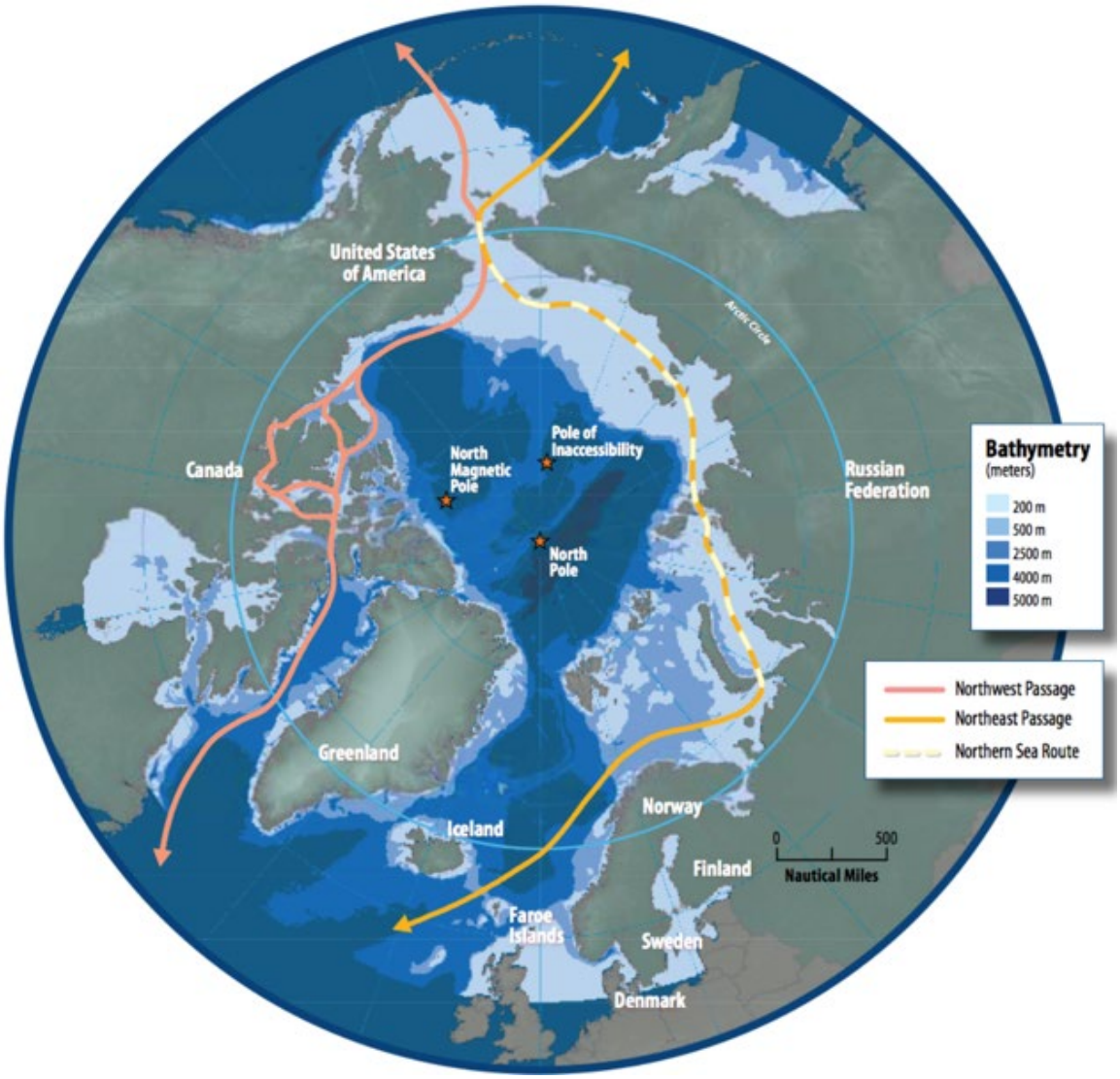

Figure 8. Current Arctic Trade Routes and Water Depths

Source: Wikipedia, "Arctic Shipping Routes," accessed May 30, 2018, https://en.wikipedia.org/wiki/Arctic_shipping_routes.

Due to climate change, Arctic ice is receding and routes are becoming more and more navigable.[41] In recent past, Chinese ships have navigated both the NWP and NSR in an attempt to find shipping routes that are shorter, faster, and more cost effective. The NSR has been identified for its potential as a shorter route between East Asia and

Northern Europe and navigation through the NSR continues to grow. In 2010, four cargo ship reportedly transited the NSR. In 2011, it was 34 ships. 2012 reported 46 ships and 2013 saw 71 ships transit the NSR.[42] In addition, there are reports of increased Russian coastal activity, a sign these waterways are becoming more and more navigable.[43] The NSR, running along Russia's northern border, is 4,800 nautical miles shorter than the traditional Suez Canal route. Also, its waters are pirate free.[44] The NSR is safer in some respects, but offers the new challenges associated with ice cover. For instance, the NSR sailing season is only six months in length, from June to November, due to ice accumulation.[45]

Most scholars agree there would be added expenses associated with insurance rates and pilotage through these tough navigable waters. Also, they recognize that additional costs would arise from the use of Russian port maintenance facilities and escort icebreaking ships. The fourth Annual Arctic Ambitions Conference calculated that Arctic infrastructure necessary to support the use of Arctic trade routes would cost approximately $100 billion.[46] Also, most ships require an icebreaker escort for safe passage through the NSR. The savings associated with the route, however, are monumental and Chinese analysts predict that during the next decade up to 15 percent of China's international trade may be shipped via the NSR.[47] The significantly shorter distance that one could travel between Hamburg Germany and Yokohama Japan, using the NSR, would save one-third of the time and approximately $180,000 worth of fuel.[48]

As Arctic ice recedes due to climate change the NSR, and other Arctic trade routes, will be navigable for longer sailing seasons. In the summer of 2008, for the first time in history, two voyages were completed via both the NSR and the NWP, which was

a major focus of attention amongst all major shipping companies. In August 2013, the Chinese cargo ship *Yong Sheng* sailed from Dalian, China to Rotterdam, Netherlands via the NSR, reaching its destination two weeks earlier and covering a distance that is 22 percent shorter than the Suez route. [49]

Arctic Governance

The United Nations Framework Convention on Climate Change, Barents Euro-Arctic Cooperation, International Maritime Organization, and the Svalbard Treaty are all potential sources of governance within the Arctic region.[50] Arctic governance promotes the sustainable development of the Arctic, however, a politically valid and legally binding Arctic governance system has yet to be established.[51] Despite having several frameworks that can be used to identify the rights of Arctic states, the two that scholars identify most frequently are the Arctic Council and UNCLOS.[52]

There is, however, one scholar by the name of Long Zhao who clearly defines a multilevel governance paradigm, from the context of climate change and globalization, in which the Arctic Council and UNCLOS are nested. Long explains governance in the Arctic region from the global, regional, and sub-regional levels while discussing how Arctic governance has gradually developed from disorganization to order. At the global level, the Arctic region is a manifestation of collective action in dealing with common challenges. At the regional level, the Rovaniemi Process seeks a common identity from a wide range of actors, encouraging them to provide public goods while also protecting the exclusiveness of their interests. At the sub-regional level, the Ilulissat Process seeks exclusive jurisdiction while centralizing the cooperation among state actors to solve disputes.[53]

Global Level of Arctic Governance

Under the context of globalization, governance at the highest level cannot be purely confined within the legal borders of each state. Arctic governance, in the context of climate change, is a top-tier example to a multi-level governance approach. Global governance, is defined by scholars as the complex of formal and informal institutions, mechanisms, relationships, and processes between and among states, markets, citizens and organizations, both inter- and non-governmental, through which collective interests on the global plane are articulated, rights and obligations are established, and differences are mediated.[54] At the global level, governance can be seen as an approach in which individuals and institutions work together to solve problems using collective action decision making in a range of areas spanning beyond state borders. Under the scope of Arctic governance, collective actions require government involvement on global issues such as climate change.[55]

Regional Level of Arctic Governance

At the regional level, governance is based on institutions. The Arctic Environmental Protection Strategy (1991) signatories are committed to environmental protection in the Arctic. The Arctic Council, which was established in 1996 as the Arctic's primary institution, was a core achievement of this strategy.[56] Some scholars agree in order to increase participation in an institution, build consensus, and deter free-riders, a significant common regional feature must exist, such as protecting the Arctic maritime ecosystem, reducing Arctic pollution, animal and plant protection, and climate change.[57] The Rovaniemi Process originated from the Arctic Environmental Protection

Strategy. Signatory states of this document are committed to contribute in the sensitive issues surrounding environmental protection in the Arctic.[58]

Svalbard Treaty

The Svalbard Islands are located north of Norway within the Arctic Circle. In 1925, China signed the Svalbard Treaty, officially becoming a party member. Originally entitled the Spitsbergen Treaty in 1920, the subsequent Svalbard Treaty identified the sovereign rights for Norway over the Svalbard Archipelago while also providing certain rights to its signatories. It states that all citizens and all companies of every treaty nation are allowed to become residents, fish, and mine in and around the Svalbard Islands.[59]

Arctic Council

The Arctic Council consists of the eight Arctic states whose territories fall within the Arctic Circle. They include Canada, Denmark, Iceland, Russia, Norway, Sweden, Finland, and the United States. The Arctic Five consist of the Arctic states who have coastlines within the Arctic Circle and are thus privy to the resources within their country's EEZ. The Arctic Five are Canada, Denmark (because of Greenland), Norway, Russia, and the United States (because of Alaska). These five states prefer UNCLOS as a framework for governance within the region.

Because China does not fall within the Arctic Circle, China is technically not an Arctic state. As a result, China cannot obtain member status on the Arctic Council and directly influence the decisions made regarding Arctic policy. China has, however, applied for and achieved permanent observer statue, which provides them the ability to observe the Arctic Council and participate in its working groups. Their involvement in

the Arctic Council is limited to scientific research and the contribution of funds for certain projects.[60] Permanent observers can participate in the Arctic Council and they are a part of the Council's common identity, but lack governance capability. Observers to the Arctic Council can satisfy its purpose if they are willing to use their resources and provide public goods, but funding activity is purposefully restricted to less than the member contribution to limit influence from non-member actors. Arctic Council permanent observers are encouraged to demonstrate political willingness and financial ability to contribute to the works of permanent participant, but must partner with an Arctic member in doing so.[61]

As a part of the Nuuk Declaration and its annexes, the Arctic Council states that observers could only express their Arctic concerns through member states and participants without any right to veto on any specific topic. Decisions at all levels in the Arctic Council are the exclusive right and responsibility of the eight member states taken by consensus. By allowing observers to participate in this way, the Arctic Council reaches its duel goals of restriction and exploitation while effectively enhancing the importance of the Arctic in the global politics.[62] This Permanent observer status signals China as a welcome partner in the Arctic region, but does not provide China with voting rights.[63]

The seventh Arctic Council Ministerial Meeting in May 2011 adopted the Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic, the first legally binding agreement since the Council's inception in 1996.[64] This occurred despite the argument of some scholars that the Arctic has no politically valid and legally binding Arctic governance system. This meeting also stated that countries

intending to become observers of the Arctic Council must recognize each council member's sovereignty and jurisdiction over the Arctic. This move restricted the rights of permanent observers to the Arctic Council by raising the political threshold for non-Arctic states to participate in governance. Most scholar recognize that climate change in the Arctic is significant and some state that trans-regional issues such as environmental protection necessitate cooperation between Arctic and non-Arctic states. Other trans-regional issues include Arctic navigation and resource development. Cheng Baozhi, in an article in the *Beijing Review* stated that it would be unimaginable that non-Arctic states will remain users of Arctic shipping routes and consumers of Arctic energy without playing a role in the decision-making process.[65]

The Fairbanks Declaration 2017 on the Occasion of the Tenth Ministerial Meeting of the Arctic Council, signed by all eight Arctic States affirmed the commitment to further strengthen the Arctic Council and its activities while reaffirming its commitment to the well-being and rights of the indigenous people of the Arctic, sustainable development, and to the protection of the Arctic environment. It established the Polar Code which is a safe, secure, and environmentally conscious set of guidelines developed by the International Maritime Organization specifically for the Arctic. The Declaration also recognized that activities taking place outside the Arctic region, including activities occurring in Arctic States, are the main contributors to climate change effect and pollution in the Arctic, and underlying the need for action at all levels.[66]

Additionally, it announced the Agreement on Enhancing International Arctic Scientific Cooperation, the third legally binding agreement negotiate under the Arctic Council, and encouraged its implementation by all parties.[67] Finally, this declaration

acknowledged the need for cooperation from a wide range of government and non-government parties to cooperate on several subjects mainly focused on environmental and economic concerns. Some flaws associated with the Arctic Council have been reported as not having the ability to solve issues effectively. The Council has done little in the way of solving political and military issues. It has been stagnant in its ability to solve trans-regional environmental, climate, navigation, and energy issues concerning the Arctic.[68]

Sub-regional Level of Arctic Governance

On the sub-regional level, Arctic governance emphasizes the traditional model of governance (not global governance) with jurisdictional features. The Ilulissat Declaration, named for the location in Greenland where it was signed, was initiated from a Ministerial Meeting of the Arctic Five in 2008.[69] Consisting of Norway, Russia, Canada, Denmark, and the United States, the Arctic Five are the five Arctic states whose coastlines border the Arctic Ocean. All five agreed there was no need for an additional regime to govern the Arctic region and all coastal disputes can be solved under the legal framework of UNCLOS. Many see Denmark and Norway as having an unfair imbalance of power when compared to the United States, Canada, and Russia under this declaration. Also, those Arctic states whose coastlines do not border the Arctic Ocean, such as Finland, Sweden, and Iceland have an inferior position to the other five states.[70]

UNCLOS

The Arctic Five have attempted to monopolize the Arctic and the majority of its resources. As a legal framework of governance on the local level, UNCLOS can be very

effective. Russia and Norway recently reached an agreement on their shared borders in the Barents Sea and Arctic Ocean. UNCLOS does not, however, address specific issues that only relate to the Arctic. Inherent flaws within this framework include scientific research, research development, and environmental protection. Despite these challenges, UNCLOS does underline the importance of cooperation and observance of the international maritime law.[71]

Conflict

The University of Cambridge study, "China: The Three Warfares" states "where the possibility of creating new norms exists, Beijing acts assertively." It states China uses psychological warfare to influence and/or disrupt an opponent's decision-making capability, media warfare as a constant and ongoing activity aimed at long-term influence of perceptions and attitudes, and legal warfare to exploit the legal system to achieve political or commercial objectives. These three warfares are dynamic three-dimensional war-fighting processes that are highly deceptive and flexible, are unconventional, and geared toward winning "hearts and minds." It seeks to alter the strategic environment in a way that renders kinetic engagement irrational.[72]

Despite all of the possible governing frameworks that are present in the Arctic, there still is no concrete legal form of order within the region. In political sciences, governance represents a process of interaction between different public and private actors, political actors, and the growing interdependence between them as societies and institutions become more complex and more diverse. Robert Keohane wrote that interdependence and the lack of governance, when combined, make a deadly mixture.[73]

Chinese Relationships with Arctic States

China and Iceland

An article written in January of 2013 discussed a rejected proposal of a Chinese real estate tycoon to purchase a large swath of land in a remote coastal region in Iceland. Huang Nubo, chairman of Zhongkun Investment Group, proposed a $200 million, 300-square-kiometer, 100 villas "Nordic holiday resort platform." The remoteness of this parcel of land, along with its coastal feature that provided access to natural resources and deep-water ports, was ultimately dismissed for national security issues due to its size.[74] Damien Degeorges, a researcher at the University of Greenland has stated that "Iceland is seen by some as a future hub for Chinese shipping activity in the region."[75] He has also stated that China has been focusing on building relationships with the Arctic States, namely the smaller ones like Iceland and Denmark, as inroads into the Arctic region.[76]

In July 2014, China and Iceland signed a "Free Trade Agreement," its first with an European country.[77] Iceland's president has publicly called for an expanded role for China and other Asian counties in the future of the Arctic, arguing that the rapid melting of sea ice was having effects far beyond the region.[78]

China and Denmark

Denmark is considered an Arctic state due to the location of its territory, Greenland.[79] It is subject to an imbalance in national power when compared to Russia, Canada, and the United States while cooperating with the other Arctic Five under the legal framework of UNCLOS.[80] As a result, Denmark could benefit from having a large and influential country as a partner in Arctic affairs. China is currently one of the major investors in Greenland's mining industry.[81]

China and Norway

In 2010, Norway signed an agreement of polar research cooperation with China.[82] Similar to Denmark, Norway is also subject to an imbalance in national power when compared to Russia, Canada, and the United States while cooperating with the other Arctic Five under the legal framework of UNCLOS.[83] In 1925, China acceded to the Svalbard Treaty, which marked the beginning of China's role in Arctic affairs. Since the 1990s, China has conducted eight scientific expeditions to the Arctic and has set up the Arctic Yellow River Station, a basic Arctic observation system, in Norway's Svalbard Islands. Russia Academy of Science report states that Norway's claim on Arctic resources is 12 percent of the Arctic total.[84]

China and Canada

Canada refers to itself as the "Arctic Superpower" and is credited for spearheading the establishment of the Arctic Council in 1996. In 2010, Canada and China signed an agreement on scientific cooperation in polar science.[85] In May 2013, in its second term as chair of the Arctic Council, Canada developed an agenda that followed the themes of responsible resource development, safe shipping, effective governance, and development of sustainable circumpolar communities.[86]

The Canadian north has some of the world's most attractive mining sites, but difficulties exist in exploitation due to the harsh landscape and climate. As a result, China could make for a valuable Canadian partner in this regard.[87] One recent deal came into fruition between Canada and China on the matter of resources posed a threat to resource security. The Canadian government deliberated for months before agreeing to allow the takeover of Nexen by China National Overseas Oil Corporation.[88] In the area of freedom

of navigation along the NWP, Canada takes a hard stance on its legal position; that the NWP is considered to be historic internal waters enclosed by straight baselines and not an international strait.[89]

China and the United States

Because of Alaska, the United States is considered an Arctic state along with the other seven nations that make up the Arctic Council. As major trading partners with Alaska, many of the 13 non-state permanent observers to the Arctic Council play an increasingly important role in Alaska's economy.[90] China has been Alaska's largest trade partner for the past seven years.[91]

In 2017, Alaska exported nearly 5 billion dollars of goods, 1.3 billion dollars went to China. Among the goods sold to China was seafood costing nearly 800 million dollars, a 26 percent increase from 2016. Alaska has also profited from sales of metal ore and forestry to China. In 2017 alone, Alaska exported metal ore costing 350 million dollars and forestry products costing millions.[92]

China is making significant progress developing partnerships with the United States in the State of Alaska. In November 2017, three Chinese state-owned companies entered into a deal with the State of Alaska and Alaska Gasline Development Corporation. This Chinese development deal was for 43 billion dollars to mine in Alaska for liquified natural gas (LNG). As the United States attempts to lower its current trade deficit with China, more deals are likely between the United States and China in the future.[93]

China and Russia

China's relationship with Russia has improved in recent years and continues to strengthen to this day. In 1996, China and Russia established, along with several other nations, the Shanghai Cooperation Organization, which now consists of eight-member states, four observer states, and six dialogue partners. The Shanghai Cooperation Organization promotes peace, security, and stability in the region and China and Russia are the leading actors. Also, it promotes politics, trade and economy, science and technology, culture as well as education, energy, environmental protection, and other fields. One major ingredient to economic cooperation are conventional arms trade with Russia as the supplier. Another major ingredient in economic cooperation is energy with Russia, Kazakhstan, Uzbekistan, and Iran as the big exporters and China and India as significant importers. "Comprising of significant territory in and around Central Asia, a large part of the world population, energy sources, nuclear arms, and significant armed forces, the Shanghai Cooperation Organization in theory has a formidable economic, political, and military potential."[94]

Russia has a renewed interest in the Arctic fueled by economic opportunity.[95] The Russia Academy of Science reports state Russian claim on Arctic resources is 52 percent of the Arctic total. Russia exports 88 percent of crude oil and natural gas via pipelines with the remaining majority of exports transported by ship. Europe is the biggest customer, with China and Japan in close second.[96] Russia does want to strengthen economic cooperation in the Arctic, but only on the condition that their own sovereignty rights are not challenged, including offshore areas.[97] China works through partnership in the Arctic region and Russia seeks to improve its relationship with China.[98] Following

diplomatic fallout from Russia's annexation of Crimea from Ukraine in 2014, Russia's bilateral economic cooperation with China became more pronounced. Sanctions led by the United States and European Union forced Western companies partnering with Russia oil and gas firms on Arctic projects to withdraw. This resulted in China being elevated as the de facto main partner in Russian ambitions to develop the Arctic and Russia's far eastern region.[99] The Yamal LNG project is a typical model. In November of 2008, Gazprom LNG plant in Sarbetta, northeast of the Yamal Peninsula of Russia, has been working closely with China as the Chinese state-owned China National Petroleum Corporation owns 20 percent.[100]

In March, 2013, China signed an agreement in which Russian state-owned oil company Rosneft would double oil deliveries to China. The agreements resulted in Russian-accepted $25 billion loan from China and a joint development projects on the Arctic in the Zapadno-Prinovozemelskii structure in the Barents Sea and the Yuzhno-Russky and Medynsko-Varandeyskii structure in the Pechora Sea. China National Petroleum Corporation also signed a 15-year purchase deal with the private Russian LNG company Novatek. Novatek has an on-going LNG project on the Yamal Peninsula. This further strengthens ties between China and the Arctic region.[101]

Another goal of Russia's in the Arctic is the development of the NSR, the Arctic route that runs parallel to Russia's northern coast. Russia has a dual-use plan to build new ports along the NSR that could serve both military and civil purposes. A portion of this funding will be used to construct a new generation of icebreaker ships to aid in NSR navigation.[102] Legal status, means of control, and regulations for shipping are Russia's core concerns over the NSR. Russia would like to maintain jurisdiction over the NSR, be

able to control and deny access, and have priority rights to its use and in providing icebreaking services for customers of the NSR.[103] Rosatomflot, an icebreaker escort company, is currently the main player along the NSR.[104] To avoid expensive fees, many other countries have started producing icebreaker ship capabilities in response to Russian statements on the subject.[105]

In November 2010 Russia's largest state-owned shipping company, Sovcomflot, and China National Petroleum Corporation signed a long-term agreement to coordinate shipping through the NSR. Russia perceives an increase in Chinese interest in the NSR and official estimates state that 5 to 15 percent of Chinese trade may be by way of the NSR as early as year 2020.[106] As Russia expands its cooperation with China and other countries in the areas of investments and financial support, it also grows more dependent and influenced by outside states in the areas of Arctic policy.[107]

High capacity sustained international shipping along the NSR can only be made possible with supporting infrastructure. Russia is currently prioritizing the development of its country's Arctic infrastructure as a part of its long-term goals for NSR use. The Arctic transport system includes much more than the NSC. It also includes roads, river routes, airports, and railways. This is in addition to cultural infrastructure like ports, navigational-hydrographic and hydrometeorological support, and communications systems. Russia's highest priorities include modernization and building of new ports as well as dredging along the main Arctic River routes. Russia cannot build LNG plants in the Arctic unless proper infrastructure is developed.[108] China and Russia have entered into a series of negotiations to build a deep-water port in the Russian Arctic city of Arkhangelsk as well as the Belkomur railway link project connecting the White Sea with

the Ural region. China's commitment to the development of Russia's Arctic infrastructure projects have been confirmed in Saint Petersburg in May 2014 by then Vice President Li Yuanchao and, more recently, by Vice Premier Wang Yang in Arkhangelsk in March 2017. Additionally, negotiations between Finland and China to construct a fiber-optic cable system in Siberia were formalized in 2017 placing Russia as the platform to connect China to Northern Europe.[109]

China and the Arctic Indigenous People

China is a promotor of indigenous community development within the Arctic. Paying great attention to social responsibility as a cooperator in the region, China has partnered with Arctic countries while conducting economic and scientific research while also demonstrating humanitarian and environmental concerns. In 2013, China hosted the 5th World Reindeer Herders Congress, seeking to provide financial support through appropriate programs to provide capacity building amongst the indigenous people.[110]

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[110] Zhao, 127-138.

CHAPTER 3

RESEARCH METHODOLOGY

A qualitative analysis of China's new Arctic policy using pattern theory through a strategic lens, combined with peer reviewed articles written about Chinese influence in the Arctic, will be used to answer the question of what strategic purpose does China's new icebreaker ship building program in the Arctic region support. These articles will primarily be retrieved from the Fort Leavenworth Combined Arms Research Library (CARL) online database, official government and nongovernmental organization websites, and from China's White Papers. To successfully answer this question, one must first uncover the history of Chinese icebreakers and acknowledge their current usage in the Arctic, Antarctica, and other ice-covered regions. Another question that must be answered, is what resources exist in the Arctic and are they recoverable by China? Finally, the last question that must be answered to determine the purpose of China's new icebreaker ship building program, is what other purpose could Chinese icebreakers serve? These questions can best be answered by identifying China's objectives across four separate lines of efforts and describing how they contribute to a larger overarching economic end state.

There are four instruments of national power. They are diplomacy, information, military, and economic. Commonly referred to as the Diplomacy, Information, Military, and Economic (DIME), these instruments are the ways in which a country can influence any given local, regional, or global situation for its own strategic gain or desired end state. This thesis looks at these national instruments as separated lines of effort in achieving a country's desired strategic goal. Though the focus is on the economic line of

effort, all four lines of effort must be discussed, as they run in parallel in supporting China's strategic end state in Arctic affairs.

A country also need resources, or a means toward which achieving a desired end state can be made possible. Because China is not an Arctic State, has no Arctic coastline, and cannot wholeheartedly justify its Arctic presence based on geography alone, it must systematically win global approval for the work and accomplishments it has made across all four lines of effort. China must succeed diplomatically, informationally, and militarily in the Arctic in order to achieve its economic goals in the Arctic. A valuable resource like a polar research icebreaking vessel might help China fulfil these goals. For China to fully recognize its Arctic economic strategy, one very important assumption must be made, that China will continue on its path toward diplomatic, informational, military, and economic expansion in pursuit of becoming a leading world power.

China first goal within the Arctic can be achieved diplomatically. In its current condition, China is not an Arctic State, but requires a voice in governance to meet its objectives in Arctic affairs. In order for China to obtain its economic goals, China needs to prove itself as a leader in governance at the local, regional, and global levels. In order to accomplish these tasks, certain objectives need to be achieved, and specific resources are required. China needs to prove itself as a global leader in scientific research pertaining to environmental concerns surrounding issues like climate change. Looking at historical Chinese expeditions to the Antarctic and the Arctic could help satisfy this objective.

Also, China needs Arctic partners as a means to help reach its ultimate diplomatic goal of achieving leadership in governance within the Arctic region. Because China is not

an Arctic State, it must rely on the partnerships it creates with countries that represent that region and lean on those countries to achieve Chinese agendas to ultimately gain influence in Arctic affairs. Gaining global support though efforts related to environmental concerns, while also gaining a voice on the Arctic Council, would prove crucial to China's diplomatic line of effort in achieving its desired end state in establishing leadership roles at a local, regional, and global level.

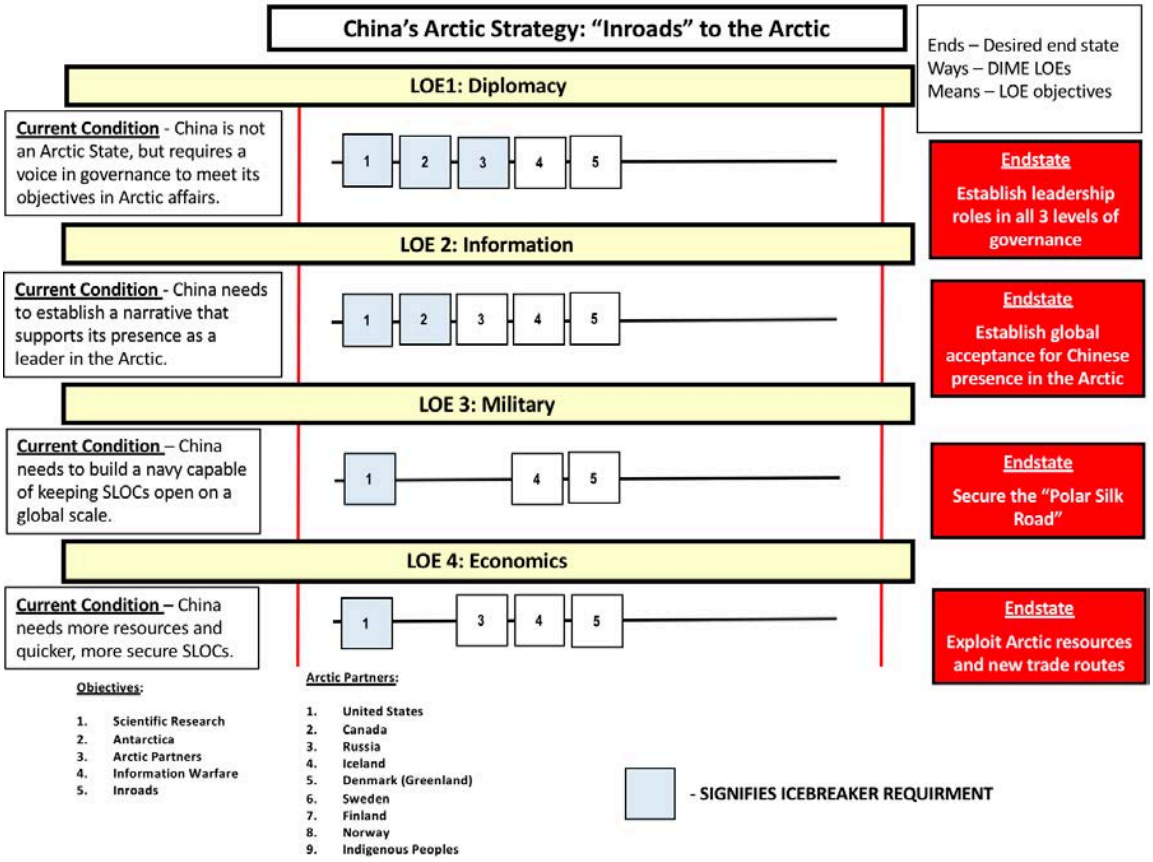

Figure 9. China's Arctic Strategy

Source: Created by author.

China's second line of effort in achieving its Arctic goals is through global media and informational influence. China needs to create a new narrative or shape a current narrative, one that highlights itself as a respected leader within the Arctic region. Sometimes recognized as a form of warfare, strategic communications can be relayed in an incomplete fashion to validate a position or argument someone is trying to make. A barrage of information that backs up your version of the truth can be influential in pushing one's agenda. On the national scene, information is recognized as an instrument of national power and can be used in multiple ways, one of which would be to shape a narrative that China's presence is needed in the Arctic and that China is recognized as a strong global leader in Arctic affairs. This could be used to achieve China's desired informational end state of establishing global acceptance for Chinese presence in the Arctic.

In order to achieve this end state, China would have to complete several objectives along the informational line of effort. Conducting scientific research on a global issue that effects all nations, like that of climate change, would help China obtain its Arctic goal, highlighting its involvement with other Arctic countries toward solving environmental issues in the Arctic would also help Chinese agendas in Arctic affairs. Understanding what has been said by top Chinese officials and scholars, and what narratives China is promoting, are also crucial to fully recognize China's informational line of effort. The magnitude of Chinese presence in the Arctic can be an argument in and of itself for validating Chinese presence in the Arctic region.

The third line of effort needed for China to realize its economic goals in the Arctic region is its buildup of military forces. To safely navigate to, from, and through

the Arctic with ships full of goods and resources, China would need to expand its military, and more specifically its naval forces, to protect this new economic interest. This Chinese military line of effort could come after the diplomatic and informational lines of effort have taken shape. A massive statement in itself, Chinese military presence in a region of the world where China has no influence and should not be operating, a region that is recognized as having large economic value, would seem precarious and cause for concern amongst Arctic States. In its current condition, China has a need to build a navy capable of keeping sea lines of communication open on a global scale to facilitate the shipment of goods and resources. Its desired end state would be a secure "Polar Silk Road" for Chinese vessels to travel and ship goods around the world. Because Arctic shipping is a relatively new concept, less evidence should exist pertaining to Chinese military influence in the Arctic region, specifically that evidence that would support China's economic goals within that region. Its military line of effort, none the less, is an important necessity for China to realize its full economic goals within the Arctic region.

The final, fourth line of effort is China's economic goal within the Arctic. Supported by the other three lines of effort, its economic line would address China's need for more resources and a quicker, more secure sea line of communication to support its growing economy and export industry. Research should support China's desired end state to exploit Arctic resources and new trade routes. Objectives along this line of effort would be similar to the other three, while relying heavily on their end states, to support China's economic goals within the Arctic region.

To successfully answer the question of what strategic purpose does China's new icebreaker ship building program support in the Arctic region, the research has to support China's ability to gain economic resources and access to trade routes within the Arctic region. An answer to this question can be obtained by systematically identifying and linking objectives across all four lines of effort in support of the DIME. Showing how each line of effort supports China's economic goal in the Arctic is also crucial. Highlighting the need for Chinese icebreaking ships to achieve certain national objectives will be instrumental in answering what strategic purpose they serve.

CHAPTER 4

ANALYSIS

There are four instruments of national power. They are diplomacy, information, military, and economic. Commonly referred to as the DIME, these instruments are the ways in which a country can influence any given local, regional, or global situation for its own strategic gain or to achieve its desired end state.

A country also need resources, or a means toward which achieving a desired end state is possible. Because China is not an Arctic State, has no Arctic coastline, and cannot wholeheartedly justify its Arctic presence based on geography alone, it must systematically win global approval for the work and accomplishments it has made across all four lines of effort. China must succeed diplomatically, informationally, and militarily in the Arctic in order to achieve its economic goals in the Arctic. A valuable resource like a polar research icebreaking vessel might help China fulfil these goals.

China's first goal within the Arctic can be achieved diplomatically. In its current condition, China is not an Arctic State, but requires a voice in governance to meet its objectives in Arctic affairs. In order for China to obtain its economic goals, China needs to prove itself as a leader in governance at the local, regional, and global levels. In order to accomplish these tasks, certain objectives need to be achieved, and specific resources are required. China's first objective is that it needs to prove itself as a global leader in scientific research pertaining to environmental concerns surrounding issues like climate change.

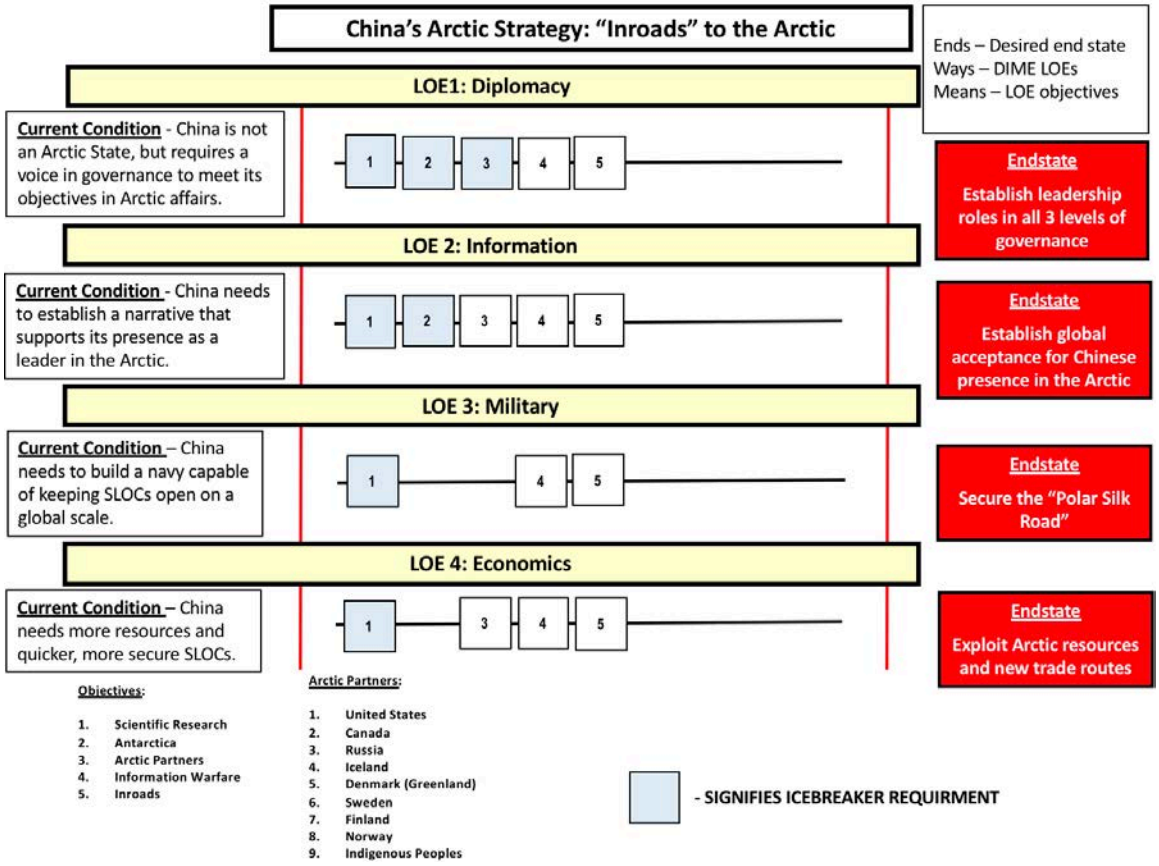

Figure 10. China's Arctic Strategy

Source: Created by author.

Historically, China has made eight expeditions to the Arctic in its research icebreaking ship the *Xue Long*. Its most recent expedition was completed recently in October of 2017 and a month later, it set sail for Antarctica. Capable of carrying 90 scientists, plus crew, the *Xue Long 2*, is scheduled to be commissioned in 2019. This new ship will have state-of-the-art equipment on board and be capable of conducting a wide range of scientific research pertaining to global issues such as climate change and other environmental and ecological concerns surrounding the polar regions. A second polar research vessel in China's inventory, with icebreaking capabilities, will prove useful to

this duel-polar initiative. Diplomatically, China's involvement in the Arctic could mirror their success in Antarctica.

China is currently utilizing the *Xue Long* in its 34th expedition to Antarctica, but its rise to acceptance in the scientific community in that region has been long and arduous. The initial attempt in the 1970s by the People's Republic of China's (PRC)'s to gain entrance into the ATS was denied due to the lack of representation and commitment of resources to the Antarctic region. Now, China has multiple permanent research facilities in Antarctica and a scientific icebreaking vessel. Both have allowed China to be self-sufficient in Antarctica while cooperative engagements with other ATS members have proven successful to China's rise in the scientific community as a whole.[1] Their model of gaining a foothold in the ATS, coupled with the building of infrastructure and the acquisition of a polar icebreaker, has been instrumental to China's success in Antarctica and can be seen at work in the Arctic. China successfully operates one research facility in Svalbard, has gained Permanent Observer status on the Arctic Council, and is currently building its second polar icebreaker research vessel.

China also needs Arctic partners as a means to help reach its ultimate diplomatic goal of achieving leadership in governance within the Arctic region. Because China is not an Arctic State, it must rely on the partnerships it creates with countries that represent that region and lean on those countries to achieve Chinese agendas to ultimately gain influence in Arctic affairs. China has collaborated on a scientific level with Arctic States, both in the Arctic and Antarctic, but is closely tied to Arctic States in a multitude of economic partnership within the region. Since early 2012, bilateral relations between China and Arctic States have best been seen in Russia, Iceland, Canada, and Greenland.

In each of these examples, China has taken a strategic buyer investor's approach as a means to gain influence in Arctic affairs.[2]

China has recently signed a "Free Trade Agreement" with Iceland and has been promoted by the Icelandic president as a valuable partner in the Arctic region.[3] Also, Iceland have been seen as a potential future hub for Chinese shipping within that region.[4] China also invests a significant amount of money in Greenland's mining industry, to boost its economic conditions while simultaneously reducing the financial burden on Denmark.[5] China's presence in Norway's Svalbard region, coupled with its resources and political clout at the global level, would prove to be a valuable partner to Iceland, Denmark, and Norway as they face an imbalance of power against larger countries in the Arctic region.[6] China and Russia are key actors in the Shanghai Cooperation Organization and rely heavily upon one-another economically through imports and exports of weapon systems and energy resources.[7] Compared to other Arctic partners, the Sino-Russian relationship is developing on a larger scale.

Russia seeks to improve its relationship with China and is currently operating multiple partnership agreements with China to exploit resources off Russia's northern coast.[8] A renewed Sino-Russian relationship was marked by President Putin's "Pivot to Asia" strategy announced in mid-2013 and is now growing stronger as United States and European Union companies were forced to pull out of Arctic partnerships with Russia, a result of sanctions imposed due to Russia's annexation of Crimea from Ukraine in 2014.[9] Additionally, Russia and China signed a long-term agreement to coordinate shipping along the NSR, a route estimated to be used for 15 percent of Chinese shipping in the future.[10] It is, however, unclear who will take the lead in the business of icebreaker escort

operations along this route. Many of Russia's current generation of icebreakers are coming to the end of their service life and, despite having three Project 21900 icebreakers currently in production in Vyborg shipyard to be used for NSR operations, Russia has cut funding for the construction of two new Project 22220 Russian icebreakers. Also, Russia has identified that the modernization of supporting infrastructure, making possible Russia's ability to exploit LNG in the Arctic, as a higher (and costlier) priority. This is in mainly due to Russia's growing energy and economic security concerns derived from a deteriorating geopolitical situation, but also raises the notion that Russia might be positioning itself to have China assume a large responsibility (and the associated cost) of icebreaker operations along the NSR.[11] Russian rhetoric about controlling the NSR by use of its icebreaker ships has prompt many nations to develop, and thus spend millions of dollars on developing, their own icebreaker capabilities. This narrative could prove beneficial to take the icebreaker burden off of Russia.

China's short-term ambitions of using the NSR for trade can be leveraged by Russia to have China pick up costs associated with icebreaker development and operations. This would provide short-term security for China operating in the Arctic and a quicker solution to open the route while Russia focuses more heavily on infrastructure, another Russian economic prospect in which China will be heavily involved. This has become more apparent as many nations, including China, have picked up the pace in icebreaker production.[12]

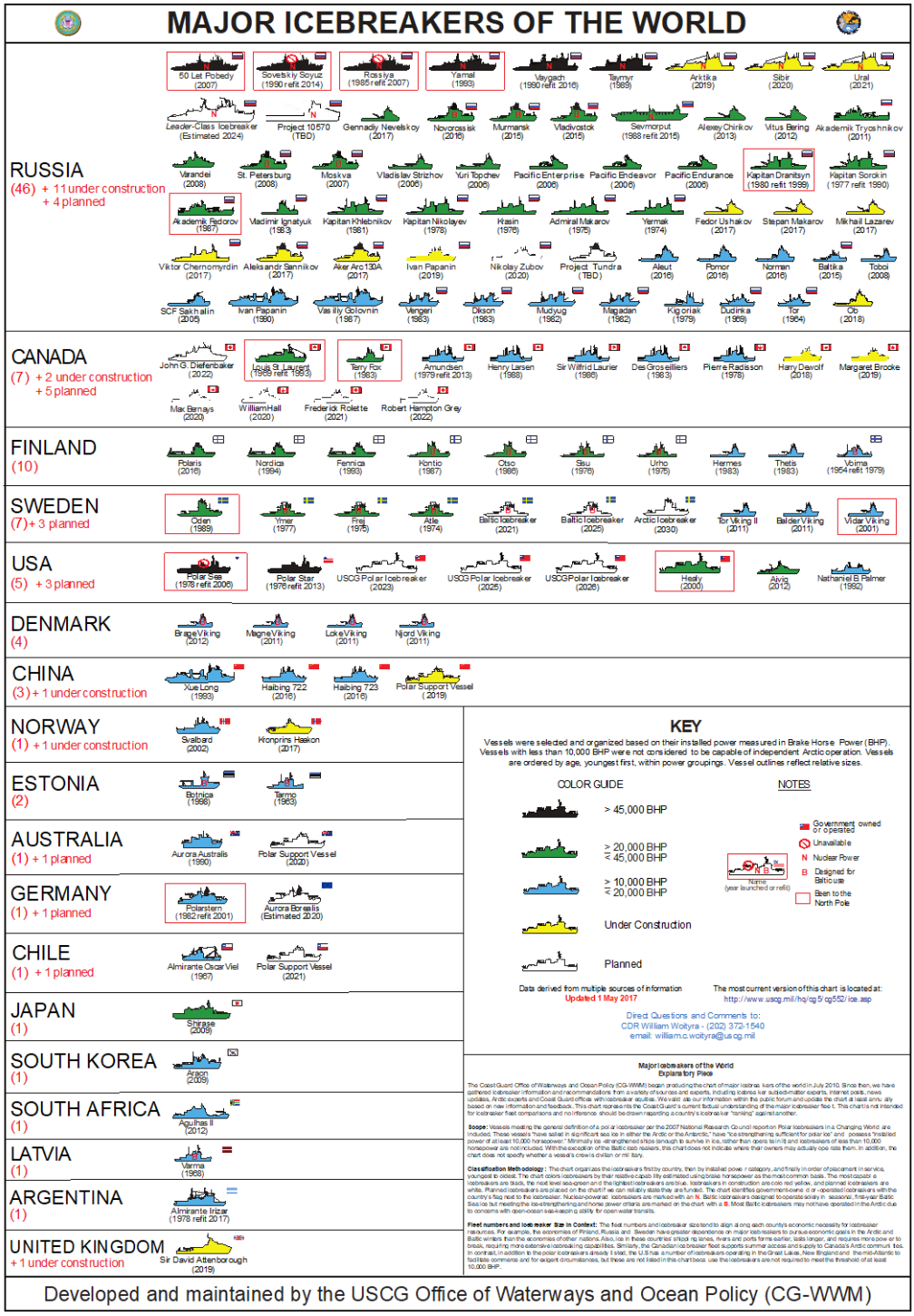

Figure 11. Major Icebreakers of the World

Source: Department of Homeland Security, United States Coast Guard Office of Waterways and Ocean Policy (CG-WWM), "Major Icebreakers of the World," May 1, 2017, accessed May 6, 2018, https://www.dco.uscg.mil/Our-Organization/Assistant-Commandant-for-Prevention-Policy-CG-5P/Marine-Transportation-Systems-CG-5PW/Office-of-Waterways-and-Ocean-Policy/Office-of-Waterways-and-Ocean-Policy-Mobility-and-Ice-Operations/.

In the long-term, however, climate change will likely render icebreakers largely irrelevant in the region. As sea-ice retreats in the Arctic, future use of icebreakers will likely be limited to emergency use or perhaps mothballed all together. This benefits Russia in that it would rely on, and thus give up some control in the Arctic to, China in the near-term, but retain staying power once icebreakers become obsolete in the region. Also, Russia would benefit greatly by not having to pour time and resources into building and operating a temporary necessity like a robust icebreaker fleet. The Russian Ministry of Finance has recently noted that it might cut funding for the construction of two new Project 22220 Russian icebreakers by the Russian Rosatom State Nuclear Energy Corporation, stating that federal funding will account for only 30-40 percent of the total cost associated with building these two vessels.[13] A likely course of action, one that is both in agreement with current Sino-Russian developing partnerships and serves as a win-win for China and Russia, would be for China to have the Russian Rosatom State Nuclear Energy Corporation develop China's new nuclear icebreaker ships. This is especially beneficial due to the fact that China is currently growing its icebreaker fleet and looking to use nuclear technology in its new class of icebreakers. Also, China currently has no civilian ship-borne nuclear reactors and thus has no readily available capability of developing such a fleet. A partnership between Russia and China could alleviate this issue.[14]

China is also partnering with Canada and currently mining in Canada's far north region.[15] Through these partnership with Arctic States, China has established an inroad to the Arctic in which it is able to participate in the region and achieve its economic goals with the agreement and support of most Arctic Council members. Additionally, China has

provided financial support to provide capacity building amongst the Indigenous Peoples of the Arctic. Its role in supporting the Indigenous Peoples of the Arctic has proven beneficial at the local level in achieving its goal of governance in the Arctic region.[16]

Operating in a scientific capacity with genuine concerns for the Arctic environment helps China gain global support though efforts related to global and regional concerns. Their partnerships within the region are legitimate reasons for China to exist and operate in the Arctic for personal and economic benefits. The lack of official governance, with China showing a strong presence at the global, regional, and local levels, proves that China is a leader in the Arctic, despite not being considered a true Arctic State. Due to its wide influence in the region, China has gained an unofficial voice on the Arctic Council, which is crucial to China's diplomatic line of effort in achieving its desired end state in establishing leadership roles at a local, regional, and global level.

China's second line of effort in achieving its Arctic goals is through global media and informational influence. Sometimes recognized as a form of warfare, information can be relayed through strategic communications to validate a position or argument someone is trying to make. A barrage of information that backs up a narrative can be influential in pushing one's agenda.[17] China has recently created a new narrative through its Arctic policy, highlighting itself as an important stakeholder and a respected contributor in regards to scientific research and participation in governance within the Arctic region.[18] On the international scene, information is recognized as an instrument of national power and can be used in multiple ways, one of which would be to shape a narrative that China's presence is needed in the Arctic and it is recognized as a strong global leader in Arctic affairs. This could be used to achieve China's desired informational end state of

establishing global acceptance for Chinese presence in the Arctic. In order to achieve this end state, China would have to complete several objectives along the informational line of effort.

Conducting scientific research in the Arctic on a global issue that effects all nations, like that of climate change, helps China obtain its second Arctic goal of global acceptance of its presence in the region. Using icebreaker ships to reach the distant and treacherous Arctic region, through dangerous ice-covered waters, makes a strong statement toward Chinese commitment in scientific research in the Arctic region while also validating its presence in the region from the public perspective. The topic of climate change within the Arctic region serves a multi-role function, supporting the diplomatic and informational lines of effort in a similar fashion. A key linchpin to Chinese success in both lines of effort is China's polar icebreaker ships. They are the means that facilitate the physical ways of navigating the Arctic in addition to the establishing a narrative backed by science, research, and popular public opinion to establish the informational ways of successfully navigating within the Arctic. Additionally, the model China used to achieve scientific acceptance in Antarctica within its diplomatic line of effort, can easily be leaned upon and replicated to achieve global support in the Arctic.

Highlighting its involvement with Arctic countries toward solving environmental issues in the Arctic also helps China's agenda in gaining public support for its existence in the region. China is currently an active member in multiple working groups as a Permanent Observer on the Arctic Council, is a leading contributor toward solving multiple issues that have been identified by the Council, issues that range from climate change at the global level to financial support and the building of infrastructure for the

Indigenous Peoples at the local level. Its polar icebreaker floating research facility can, once again, prove to be instrumental in bringing partners together through collaboration in various research projects in the region.

Understanding what has been said by top Chinese officials and scholars, and what narratives China is promoting, are also crucial to fully recognize China's informational line of effort. Its consistent use of the phrase "for mankind" is a Chinese trending narrative used to debate ownership of resources in coastal waters. It is in the verbiage of UNCLOS, which China has identified as a legitimate source of governance in the Arctic region. It is also in the forefront of ongoing Chinese disputes in the South China Sea and is now used five separate times in China's new Arctic policy. When discussing fisheries as a resource which is typical of coastal waters, China has stated that fish stocks have shown a tendency to move northward due to climate change and the Arctic has the potential to become new fishing ground, successfully laying the foundation of a future narrative.

Additionally, China recognizes the Spitsbergen Treaty (also called the Svalbard Treaty) as another form of governance within the Arctic. This is identified in China's Arctic policy. The Spitsbergen Treaty allows its signatories the rights to use the region for the purpose of research, mining, and fishing, treating such countries as if they have sovereign rights within the region. Svalbard also happens to be the current location of China's Yellow River Station research facility in the Arctic region.

Pertaining to trade routes within the Arctic, Russia has gone through great lengths identifying geographically the location of the NSR, has identified its future potential as a valuable Chinese shipping lane, and is making attempts to secure its interests along the

NSR for economic purposes.[19] China's Arctic policy lists all trade routes that exist within the Arctic region yet makes no mention of the NSR. Instead, China appears to refer to the NSR as the NEP. Traditionally, the NEP has been referred to as a smaller section of the NSR that comprises of the Barents Sea. This could be seen as a new narrative that delegitimizes Russian efforts to securing its northern trade route.

The magnitude of Chinese presence in the Arctic can be an argument in, and of, itself for validating Chinese existence in the Arctic region. China has successfully established an inroad through scientific research towards climate change and has used its polar research icebreaker as a platform to gain a foothold in the region. Now, China has achieved full emergence across all levels of governance while entangling itself, economically, with all member of the Arctic community.

The third line of effort needed for China to realize its economic goals in the Arctic region is its buildup of military force. To safely navigate to, from, and through the Arctic, with ships full of goods and resources, China would need to expand its military, and more specifically its naval forces, to protect this new economic interest. This military line of effort is now starting to take shape with the Chinese People's Liberation Army Navy continuous growth in size and stature. In its current condition, China has a need to build a navy capable of keeping sea lines of communication open on a global scale to facilitate the shipment of goods and resources. Its desired end state would be a secure "Polar Silk Road" for Chinese vessels to travel and ship goods around the world.

Recent instances of Chinese military vessels operating near the Arctic have been few and far between, but have raised some security concerns. The transit of the People's Liberation Army Navy ships near Alaska in the Bering Strait chokepoint between Russia

and the United States in September of 2015 is one example. Another, and more concerning example, occurred in July 2017 when China and Russia executed joint maneuvers between People's Liberation Army Navy and Russian Navy vessels in the Barents Sea.[20] This Sino-Russian military relationship broadens the relationship between these two powerful nations already intertwined through diplomatic and economic partnerships. Retracting sea-ice within the Arctic, allows both nation's military the freedom of maneuver along Russia's northern coast and Northern Europe or along Canada's norther border into the Atlantic. This could become a potential threat to the east coast of the United States from Chinese, Russian, or other military forces from new avenues of approach through the northern Atlantic. This potential treat could also deny the United States the freedom of access to Europe that it has enjoyed via the Atlantic Ocean since the Cold War. This perceived new threat is a likely causal factor to the May 4, 2018 statement in Norfolk, Virginia, made by Chief of Naval Operations during United States Fleet Force's change of command ceremony, announcing the resurrection of United States Second Fleet.[21]

Besides the two examples given in the previous paragraph and because Arctic shipping is a relatively new concept, less evidence exists pertaining to Chinese military influence in the Arctic region, specifically that evidence that would support China's economic goals within that region. Its military line of effort, none the less, is an important necessity for China to realize its full economic goals within the Arctic region and future icebreakers might help in China's success. China currently has two separate types of icebreakers, the *Xue Long* polar research vessel and the local-use *Haibing* icebreaker.[22] Despite this, China does have a capabilities gap pertaining to escort icebreaker services

for shipping operating along Arctic sea routes. China's new funding for nuclear ships, that have presumably been identified as icebreakers, have been discussed by scholars closely associated with China's People's Liberation Army and could become military class icebreakers capable of completing such missions while also serving as research platforms with information collection capabilities. Military class icebreakers, despite their surveillance capabilities and being closely associated with China's military, could be a less-threatening version of Chinses military presence in the Arctic, operating in the capacity of an escort and search and rescue platform. This could prove to be a valuable stepping-stone for China to enter the Arctic militarily. This theory becomes problematic if China seeks Russian support to build its new nuclear class escort icebreaker as Russia would not outfit Chinese military ships operating off its northern coastline with highly sophisticated surveillance equipment.

The final, and fourth line of effort is China's economic goal within the Arctic. The research clearly highlights valuable economic resources within the Arctic region. The Arctic is home to 30 percent of the world's undiscovered gas and 13 percent of the world's undiscovered oil, nearly all of it which is offshore and in less than 500 meters of ocean water.[23] In 2008, the US Geological Survey published an article entitled "Arctic Resource Assessment: Circum-Arctic Resources Appraisal: Estimates of Undiscovered Oil and Gas North of the Arctic Circle" which stated that 22 percent of the world's oil and natural gas could be located beneath the Arctic. The total untapped resources in the Arctic include 90 billion barrels of oil, 1,669 trillion cubic feet of natural gas, and 44 billion barrels of natural gas liquids. Of the resources listed, 84 percent are located in

offshore areas. Of these offshore resources, 88 to 95 percent fall within one of the Arctic States' 200 nautical mile EEZ.[24]

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Figure 12. Undiscovered Natural Gas in the Arctic

Source: Department of History at Ohio State University and Miami University, "Maps and Charts," accessed May 30, 2018, https://origins.osu.edu/article/824/maps.

The research also clearly highlights valuable trade routes within the Arctic region. A voyage from the port of Seattle to the port of Rotterdam in the Netherlands via the NWP saves 2,000 nautical miles and 25 percent of shipping cost as opposed to the

traditional Panama Canal route.[25] The NSR, running along Russia's northern border, is 4,800 nautical miles shorter than the traditional Suez Canal route. Also, its waters are pirate free.[26] Chinese analysts predict that during the next decade up to 15 percent of China's international trade may be shipped via the NSR.[27] The significantly shorter distance that one could travel between Hamburg Germany and Yokohama Japan, using the NSR, would save one-third of the time and approximately $180,000 worth of fuel.[28] In August 2013, the Chinese cargo ship Yong Sheng sailed from Dalian, China to Rotterdam, Netherlands via the NSR, reaching its destination two weeks earlier and covering a distance that is 22 percent shorter than the Suez route.[29]

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Figure 13. Undiscovered Oil in the Arctic

Source: Department of History at Ohio State University and Miami University, "Maps and Charts," accessed May 30, 2018, https://origins.osu.edu/article/824/maps.

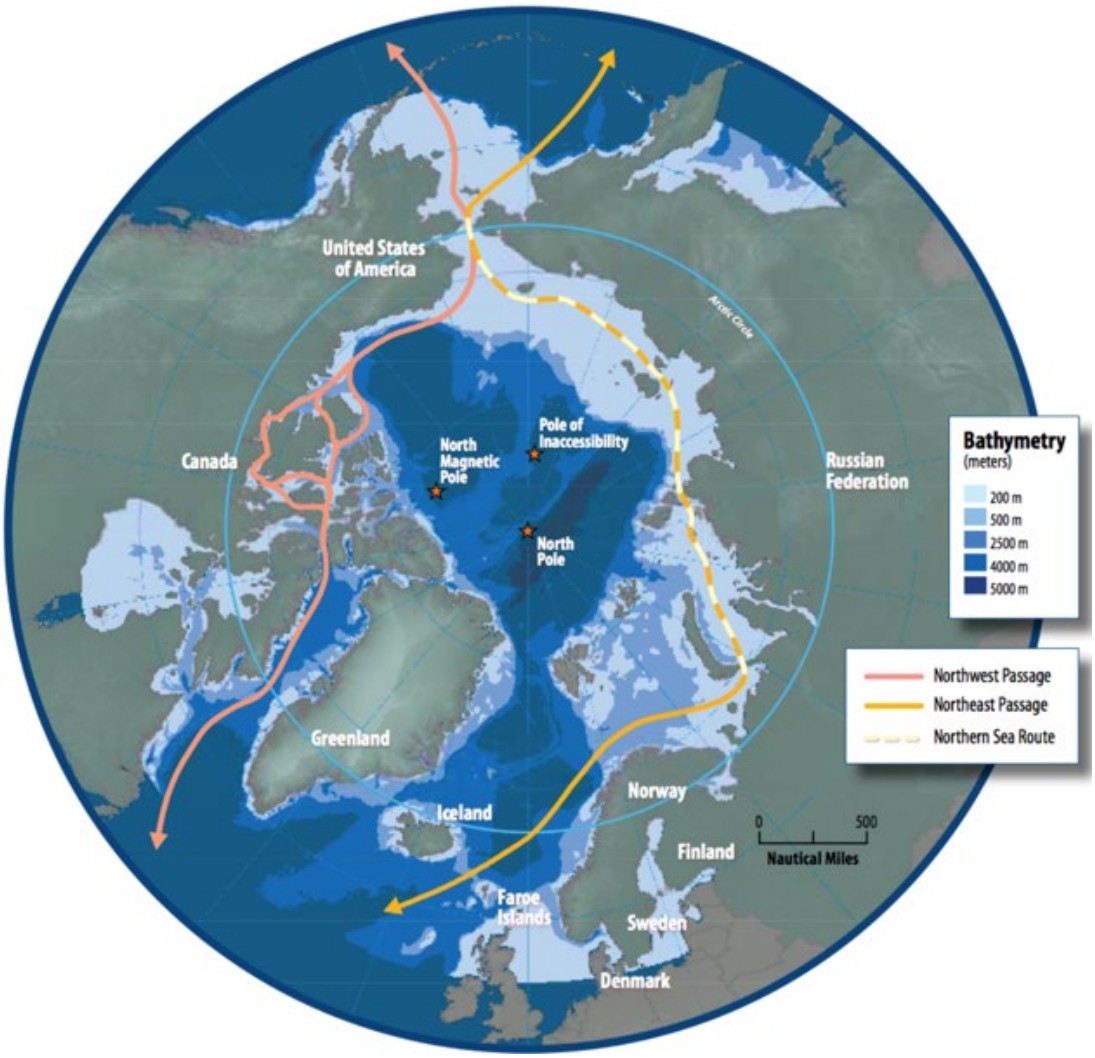

Figure 14. Current Arctic Trade Routes and Water Depths

Source: Wikipedia, "Arctic Shipping Routes," accessed May 30, 2018, https://en.wikipedia.org/wiki/Arctic_shipping_routes.

China's economic line addresses its need for more resources and a quicker, more secure sea line of communication to support its growing economy and export industry. Its economic line of effort is supported by all other lines in achieving China's goals in the Arctic. Research also supports China's desired end state to exploit Arctic resources and

new trade routes through cooperative partnerships within the region. Objectives along this line of effort are similar to the other three and they rely heavily on the previous three end states of: (1) achieving an established role in governance; (2) gaining popular and global approval to their existence in the Arctic; and, (3) establishing a navy to protect its interests in the Arctic to support China's economic goals within the Arctic region. The use of icebreaker ships is also important. Research needed to locate and acquire resources can be conducted on polar icebreakers. Icebreakers are also required for near- to medium-term escort capabilities through seasonal Arctic sea routes.

In summary, China clearly has established multiple lines of effort, using DIME as a means to achieving its Arctic goals while using icebreakers as a multi-role tool as its inroad to the Arctic region. China has made significant progress in Arctic governance by demonstrating itself a leader in areas of scientific research and Arctic development. It has also gained positive public opinion, to include Iceland's president who has applauded China's involvement in Arctic affairs. Additionally, China has taken measure to secure the future of its shipping by increasing its naval capabilities. These three end states, and the relationships that China continues to forge with Arctic States, will undoubtedly drive China to the successful exploitation of Arctic resources while also gaining China access to Arctic trade routes, satisfying its economic Arctic end state.

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[1] Harrington, 1-19.

[2] Wright, 1-37.

[3] Salov and Wolf, 72.

[4] *China Economic Review*, "Arctic Inroads," 40.

[5] Salov and Wolf, 72.

[6] Zhao, 127-138.

[7] de Haas.

[8] Fengshi Wu, "China's Ascent into Global Governance and the Arctic," *Vestnik Sankt-Peterburgskogo Universiteta, Seriia 6: Filosofia, Kulturologia, Politologia, Mezdunarodnye Otnosenia* 2 (2016): 118-126.

[9] Lanteigne.

[10] Zysk, 30-38.

[11] Mitko.

[12] Department of Homeland Security, United States Coast Guard Office of Waterways and Ocean Policy (CG-WWM), "Major Icebreakers of the World," May 1, 2017, accessed May 6, 2018, https://www.dco.uscg.mil/Our-Organization/Assistant-Commandant-for-Prevention-Policy-CG-5P/Marine-Transportation-Systems-CG-5PW/Office-of-Waterways-and-Ocean-Policy/Office-of-Waterways-and-Ocean-Policy-Mobility-and-Ice-Operations/.

[13] Mitko.

[14] Ibid.

[15] Wright, 1-37.

[16] Zhao, 127-138.

[17] Halper, 189-192.

[18] The State Council Information Office of the People's Republic of China.

[19] Zysk, 30-38.

[20] Lanteigne.

[21] Navy Office of Information, "CNO Announces Establishment of U.S. 2nd Fleet," Department of the Navy, May 4, 2018, accessed May 27, 2018, http://www.navy.mil/submit/display.asp?story_id=105453.

[22] Department of Homeland Security, United States Coast Guard Office of Waterways and Ocean Policy (CG-WWM).

[23] Chircop, 1.

[24] Zhao, 127-138.

[25] Ibid.

[26] Chircop, 1.

[27] Salov and Wolf, 72.

[28] Chircop, 1.

[29] Zhao, 127-138.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

This research was conducted to initially determine the economic force driving China's recent decision to increase its icebreaker production while focusing on the Arctic as a new area of interest due to its abundant resources and opening trade routes. After discovering the capabilities and amount of time and money associated with owning and operating a polar icebreaker, it was determined that these ships must be used for a much broader purpose. As a result, the research was expanded to encompass all four instruments of national power, commonly referred to as the DIME. Using each as a separate line of effort as a part of the methodology, the research clearly identified multiple uses for Chinese icebreaker ships.

China currently has two separate classes of icebreaker ship, with a possible third class of ship in the early development stages. These different classes of icebreakers serve different purposes. The polar class icebreaker *Xue Long*, along with its sister ship currently in production, the *Xue Long 2*, are floating research facilities capable of operating in the harsh conditions of the polar icecaps for long periods of time. The *Xue Long* serves on both the Arctic and the Antarctic missions. While China is well established in Antarctica and will likely continue research in the southern polar region, a second polar icebreaker, the *Xue Long 2*, will reduce its sister ship's work load while affording the ability to conduct simultaneous missions to both the north and south polar regions.

The *Haibing 722* and *Haibing 723* are made for local use to keep ice from building along China's coastal waters within the Bohai Sea. They are not fit for long research expeditions to the polar region, but are equipped with technology capable of performing information collection at the military level. Because they are not nuclear powered, infrastructure would have to be in place to support this class of icebreaker for use as an escort along the NSR.

Figure 15. China's Bohai Sea

Source: Wikipedia, "Bohai Sea," accessed May 30, 2018, https://en.wikipedia.org/wiki/Yellow_Sea.

A third class of nuclear icebreaker, with long-range polar capabilities, has recently been approved funding by the Chinese government, but no further indications exists to when, or if, China might start building this new class of icebreaker. This new

class of icebreaker would, however, fill a significant gap in China's capabilities between a massively expensive polar icebreaker research facility and its local, non-polar capable icebreaker classes of ship. This new class of nuclear-powered polar icebreaker would be more reliable than the local versions and less reliant upon infrastructure, cheaper to operate than the current polar version, and could be mass produced to conduct escort missions along the NSR.

An abundance of resources exists in the Arctic region. Research highlights China's need for Arctic resources to support its growing economy and to safeguard itself from being heavily reliant on the Middle East. Polar icebreakers are capable of performing research, with a possibility of locating resources within the Arctic region, but will doubtfully be used as a means to extract, ferry, or escort resources. Evidence points to their current exclusive use as a scientific research platform and a means to deliver scientists and their supplies to the polar regions. This could be due to the cost associated with owning and operating a polar icebreaker research facility and China's broader agenda in achieving multiple end states along several lines of effort within the region. Also, China is not an Arctic State and has no rights to Arctic resources. More likely than not, China will continue to partner with Arctic nations for the exploration and exploitation of Arctic resources.

The four lines of effort are stacked and running concurrently with one supporting the others, but the use of icebreakers within each effort is staggered. Icebreaker usage in lines of effort one and two are ongoing, but their usage in lines of effort three and four are still in their infancy. The strategic purpose of icebreakers locally are to keep China's ports clear, keep the flow of shipping in and out of its harbors moving in support of its

growing economy, and allowing its navy in and out of its naval base in the Bohai Sea. At the regional and global levels, China is using its polar icebreakers to establish the acceptance of its presence and leadership in the Arctic region. Its new nuclear-powered icebreaker program will produce icebreakers capable of maintaining a free flow of goods along the NSR and other Arctic routes. This is strategically important to China's growing economy in that it saves millions in shipping costs to Northern Europe while providing an alternative to the traditional, pirate infested, Suez route.

Recommendations

Further research into China's nuclear icebreaker program must be conducted as information becomes available. As it stands, funding has been authorized, but no other information exists as to whether or not China will pursue production on this new class of icebreaker. Also, speculation exists that Russia will partner with China to build their nuclear class icebreakers in the future. Additionally, limited information exists on the Haibing military class icebreakers. Research, possibly within publications written in Chinese, should be used to expand up what is known of this class of icebreaker.

This thesis highlights Chinese scientific and economic entanglements in the Arctic region. Its findings show that China appears to have strong support among some smaller actors operating in the Arctic. Larger actors within the Arctic region take a more skeptical approach to Chinese presence and are more cause for concern. In all cases, new partnerships in the Arctic region should be monitored, specifically partnerships that develop between China and the United States, Canada and, in particular, Russia.

More research needs to be conducted on China's uniquely heavy regard for the Spitzbergen Treaty as a primary source of governance in the Arctic. Coupled with its

current research facility in the Arctic, China could be setting the stage under UNCLOS as a sovereign Arctic State with coastal EEZs in the Arctic region. This theory is problematic, however, due to China's ongoing dispute with the Philippines and other countries within the South China Sea. On one hand, China is laying claims based on old maps while simultaneously building new islands to support its sovereign rights in the region. On the other hand, China considers leaving UNCLOS due to the constraints it suffers under current maps of the area.[1] China's duel-narrative should be investigated further as it appears that China both supports and considers leaving UNCLOS. This can be seen in the South China Sea as well as in the Arctic, where China has planted itself in Svalbard while also identifying the Arctic as a place for all mankind in its Arctic policy. Similar to its actions in the South China Sea, China may be carving out a piece of the Arctic for itself under UNCLOS or discrediting current Arctic claims made by Arctic States under the same framework. Monitoring whether China continues to support UNCLOS or choses to abandon it, will undoubtedly stir conflict in both regions.

Another similarity exists between the South China Sea and the Arctic. As China pursues the NSR as its new Polar Silk Road, it will also need to protect its interest in that region with an increase to the People's Liberation Army Navy presence likely being established in Russia's back yard. This situation will undoubtedly be as delicate as the current situation of United States naval forces operating in and around the South China Sea to protect its interests within the Pacific region.

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[1] Zheng Wang, "China and UNCLOS: An Inconvenient History," *The Diplomat*, July 11, 2016, accessed May 6, 2018, https://thediplomat.com/2016/07/china-and-unclos-an-inconvenient-history/.

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