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An evaluation of oil pollution prevention strategies in the Arctic: A comparison of Canadian and U.S. approaches

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ABSTRACT

While the Arctic is often described as a cohesive region, there is great regime diversity across Arctic states. What factors influence regime diversity in the Arctic and how does that diversity impact users and coastal states? Recognizing the Arctic regime as the intersection of overlapping governance systems, this research compares two regions: the Northwest Passage, Canada and the Bering Strait, USA, applying principles of Most Similar System Design (MSSD). The two regions are parts of a common waterway, now more accessible as a result of diminished sea ice. The paper explores the similarities and differences between the two oil pollution control regimes and investigates the relationship between prevention and response measures in each regime. The Canadian oil pollution control regime is characterized by a large number of measures designed to prevent spills while the U.S. regime features measures intended to assure adequate response to spills. States most able to develop a preventative framework are those with strict legal authority and sovereign rights over their maritime regions. Moreover, states whose national identities are strongly tied to particular regions may be more likely to enact protective measures. The U.S. is dependent on international pollution control instruments in the Bering Strait given the shared jurisdiction of the waterway. Canada operates in accord with its claim that the Northwest Passage are internal waters and has enacted a unilateral pollution control regime. These differences underscore that, absent broader international agreements than exist at present, Arctic waters are likely to remain a patchwork of regulatory regimes.

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1. Introduction

The observed rate of sea ice loss in the Arctic due to climate change continues to surpass some of the most pessimistic scientific projections [1], opening the region to new users and uses. In particular, the region has attracted international attention for the potential for increased commercial shipping through the Arctic Ocean [2,3]. The 2009 Arctic Marine Shipping Assessment (AMSA) found that commercial shipping poses a serious threat to the region's ecosystem and that oil pollution is the most significant threat associated with shipping activity [4]. Moreover, the ability to respond to spills in Arctic waters is extremely limited [5]. This paper addresses national efforts to prevent and mitigate oil pollution through law and regulation.

Risks associated with Arctic shipping include deck and equipment icing, strong winds, cold temperatures, seasonal darkness, ice hazards in waterways, remoteness and a general lack of infrastructure, including emergency response capabilities [6].

Climate change exacerbates some of these risks while also leading to greater accessibility to two major shipping routes through the Arctic: The Northern Sea Route along Northern Russia and the Northwest Passage the major portion of which runs along Northern Canada and the U.S. Regulations in the Arctic for vessels must address both challenges: increased traffic and increased risk.

Comparative studies of the disparate responses of Arctic states to these challenges are generally lacking. The Arctic regime literature assessed could be distilled into two lines of thought. The first argues that the emerging issues in the Arctic will be best managed through the existing regime because it provides a flexible framework founded on collaboration and the principles of environmental protection. These scholars, [54], Brosnan et al. [7], Dodds [55], Ebinger and Zambetakis [8], Hasanat [57], Hoel [58], McDorman [9], Pedersen [61], West [3], and Young [64], contend that UNCLOS, the Arctic Council, and issue specific multilateral and bilateral agreements, which regulate state interaction and focus on particular areas of cooperation and enforcement, are sufficient to govern the Arctic. The second argues that the existing regime is insufficient to properly manage the transforming region. These scholars, Balton and Thomas [53], De La Fayette [10], Elliot-Meisel [56], Koivurova [59], Kikkert [11], Larson [12], Molenaar [60],

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Stokke [62,63] suggest a number of alternatives including a treaty framework, additional binding agreements, and a modified Arctic Council. These authors argue that a new or adequately transformed regime would better serve the interests and needs of a broader coalition of actors, including non-Arctic states, and would be more capable of regulating and managing new uses of Arctic space and resources. These scholars evaluated the Arctic regime as a cohesive unit, and did not investigate the shipping sector specifically. The Arctic Marine Shipping Assessment offered a comprehensive review of coastal state governance in the U.S., Canada, and Russia as it applies to Arctic shipping, however, it does not contain a specific comparison of the shipping regimes of individual states.

This research seeks to fill the gap in the literature by exploring and explaining two national responses to risks associated with commercial shipping in the Arctic by evaluating and comparing the approaches of the United States and Canada in their oil pollution control regimes.

2. Methods

Arctic states, while subscribing to diverse conceptions of their regions of control and their responsibilities for management and protection, are nevertheless responding to similar threats and risks associated with increased shipping traffic in concert with climate change. While systematic investigation of the diversity among pollution regimes is beyond the scope of this study, our choice of cases for study is informed by the “most similar system design” (MSSD) [13]. Choosing adjacent segments of a single waterway minimizes variation due to geography while choosing the U.S. and Canada for study maximizes difference in the outcome of the regime formation. The U.S. is operating actively to protect its waters, albeit within the confines of international law. In Canada, the state relies on domestic measures whose original passage into law was aided by a national consensus on the importance of protecting Arctic waters in the face of threats from foreign flag shipping [2].

Sections 4 and 5 assess the oil pollution control regimes in the Bering Strait and the Northwest Passage, respectively, through literature review and a review of relevant legislation and policy documents. Then Section 6 compares the regimes and identify key factors that appear to explain their outcomes.

The two oil pollution regimes explored are the United States' Bering Strait and Canada's Northwest Passage (NWP), both of which are located along a potential transarctic route connecting the North Pacific and the North Atlantic. The NWP offers a potentially crucial shortcut for commercial and private vessel traffic that would decrease the distance between Asia and Western Europe by over 7000 km, increasing the likelihood that each route will experience increased shipping traffic in the coming decades, especially as climate change continues to reduce sea ice and extend the length of the shipping season [14].

For both the United States and Canada, the oil pollution control regulations applicable to foreign flagged and domestic vessels were identified. The rules and regulations of each were classified as either *preventative* or *responsive*. Pollution regulations were deemed preventative if they contained measures applicable to vessels before an incident that could result in an oil spill occurred. These types of measures typically include construction, design, equipment, and manning (CDEM) standards, navigational aids, traffic schemes, monitoring, and communication technologies [15]. Pollution regulations were deemed responsive if they were deployed mainly after the occurrence of an oil spill incident. These include the deployment of oil recovery technologies and facilities, measures to protect shorelines and sensitive biological resources,

and response cooperation with other states. Financial liability serves both as a deterrent against potential pollution (thus, a preventative measure), but is triggered only in the aftermath of a pollution incident, and is therefore characterized as a hybrid measure.

The comparison section of the paper puts forward four causal factors that may influence the outcomes of oil pollution regimes. The first factor is geography and climate; though linked as segments of a common waterway, physical differences between the Bering Strait and the Northwest Passage may lead to distinct challenges to oil pollution prevention and response [4] and frame recent discussions of issues in oil spill response [5]. The second factor is the political climate [16] during the period of rules adoption and includes the existence of focusing events [17] that influence policy and lawmakers to adopt rules and regulations at a particular time. The third factor is the policy position of the government toward the Arctic. This factor is determined by examining the policy documents of Canada and the United States outlining their goals and objectives for the Arctic region (Brosnan et al., 2009). The fourth and final factor is the legal status of each waterway as defined by the UN LOSC and also by the governments of Canada and the United States. In the marine environment, the legal definition of certain zones provides for the types of activities, rules, and regulations that may be prescribed and enforced [18].

3. Background and literature review

3.1. Diverse conceptions of the Arctic

Diversity among Arctic governance regimes can be partially attributed to distinct conceptions of the Arctic region in each Arctic state. Keskitalo [19] argues that the Arctic is often framed as a frontier region inhabited by a low density of indigenous groups, however, this framing only reflects the Arctic in Alaska, northern Canada, Russia, and Greenland (Denmark). Finland, Norway, Sweden, and Iceland have a different understanding of Arctic life, which is not often communicated beyond Scandinavia [19]. Keskitalo [19] illustrates a potential divide between Scandinavian conceptions of their own Arctic territory and resources, and conceptions held by other Arctic states [19,20]. Another, yet similar, approach to conceiving of the Arctic region is put forward by Doubleday [21]. Doubleday describes two understandings of the Arctic. The first defines the region as home for indigenous people, whose resources supply both sustenance and livelihoods. The second conception is one in which human interests are separate from the environment, creating an Arctic hinterland containing resources for the taking. These two definitions potentially pit Arctic states and/or users against non-users creating an in-group/out-group dichotomy and further complicates cohesive governance.

3.2. Shipping in the Arctic

The potential for Arctic shipping has received considerable attention in recent years as the Northern Sea Route and the Northwest Passage have become increasingly passable for unescorted commercial vessels. Transarctic routes could reduce the transit time between Japan and Europe by 40% and between the West Coast of the U. S. to Europe by 25% [22]. A recent DNV Risk Assessment estimates the total transit voyages of the Arctic at 480 for the summer of 2030 and 850 for the summer of 2050 [22]. Arctic shipping will likely remain unpredictable and hazardous in the coming years, which is likely to delay the potential gains for commercial shipping [4,23].

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