

# The Arctic Environment and International Humanitarian Law

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## INTRODUCTION

Given the increasing legal scrutiny of the deployments and actions of armed forces in the West generally, the scant attention given to the potential role of international humanitarian law (IHL), or the law of armed conflict, in the Arctic is curious.<sup>1</sup> The UN Convention on the Law of the Sea (UNCLOS) is rightly viewed by policymakers and defence practitioners as the primary legal regime for the management of Arctic waters.<sup>2</sup> Regional powers (Canada, Russia, Denmark, Norway, and the United States) have agreed to abide by this law in the resolution of territorial disputes in the Arctic.<sup>3</sup> Their recent rhetoric has stressed the need for co-operative approaches in dealing with distinct regional challenges related to security, development, and environmental protection. These themes are reflected in a *Statement on Canada's Arctic Foreign Policy*, which

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<sup>1</sup> On the legalization of war — including in terms of international humanitarian law (IHL) — see David Kennedy, *Of War and Law* (Princeton, NJ: Princeton University Press, 2006). Though for a view suggesting that the legalisation paradigm can be misleading, see Christopher Waters, "Beyond Lawfare: Juridical Oversight of Western Militaries" (2009) 46 *Alberta Law Review* 885.

<sup>2</sup> United Nations Convention on the Law of the Sea, 10 December 1982, 1833 UNTS 3, Article 13(1).

<sup>3</sup> A formal commitment was made by Arctic nations in the Ilulissat Declaration, 29 May 2008, online: <[http://www.oceanlaw.org/downloads/arctic/Ilulissat\\_Declaration.pdf](http://www.oceanlaw.org/downloads/arctic/Ilulissat_Declaration.pdf)>.

was released in 2010.<sup>4</sup> While there is a continued focus on asserting national sovereignty, according to this statement, Canada aims to promote “a stable, rules-based region” and work program with its partners in the Arctic Council, a multinational group dedicated to regional concerns.<sup>5</sup> It would, however, be short-sighted not to give adequate consideration to IHL as a relevant legal regime if co-operation is replaced by international armed conflict. As Christopher Penny puts it, referring to antecedents from the Second World War, “[c]onflict in the Arctic isn’t a doomsayer’s dark fantasy. It is something that has already happened. And it could easily happen again.”<sup>6</sup>

Talk of co-operation is in stark contrast to the ongoing expansion of military activities in the Arctic.<sup>7</sup> As the warmer climate makes valuable resources increasingly accessible, nations are eager to protect their economic and security interests. Not surprisingly, they have all taken steps to develop their capabilities for operating in the region. In recent years, Russia has angered its neighbours by reinstating reconnaissance flights over the area and deploying vessels adjacent to a Norwegian offshore oil rig. While top officials have ruled out war, Russia’s 2008 policy statement on the Arctic makes clear that it will position itself militarily to defend its interests in the region.<sup>8</sup> Similarly, while Denmark is a proponent of peaceful regional negotiations, it is simultaneously developing naval equipment designed specifically for the Arctic seas.<sup>9</sup> The United States already possesses submarines capable of operating in the region, and its policy statements increasingly emphasize the importance of

<sup>4</sup> Canada, *Statement on Canada’s Arctic Foreign Policy 2010: Exercising Sovereignty and Promoting Canada’s Northern Strategy Abroad*, online: Department of Foreign Affairs and International Trade <[http://www.international.gc.ca/polar-polaire/assets/pdfs/CAFP\\_booklet-PECA\\_livret-eng.pdf](http://www.international.gc.ca/polar-polaire/assets/pdfs/CAFP_booklet-PECA_livret-eng.pdf)> [*Canada’s Arctic Foreign Policy*].

<sup>5</sup> *Ibid* at 3, 10.

<sup>6</sup> Christopher Penny, “International Humanitarian Law and the Arctic,” online: <<http://ccil-ccdi.squarespace.com/ccil-conference-papers/2010/>> at 2.

<sup>7</sup> Rob Huebert called attention to the continuing military expansion in the region. Rob Huebert, *The Newly Emerging Arctic Security Environment* (Calgary: Canadian Defence and Foreign Affairs Institute, 2010).

<sup>8</sup> See James Kraska, “From Pariah to Partner: Russian-American Security Cooperation in the Arctic Ocean” (2009) 16 *ILSA J Int’l & Comp L* 517 at 525-26; Dmitri Trenin and Pavel Baev, *The Arctic: A View from Moscow* (Moscow, Russian Federation: Carnegie Endowment for International Peace, 2010) at 9.

<sup>9</sup> Huebert, *supra* note 7 at 9-12.

the Arctic to national security.<sup>10</sup> China's new Arctic vision also presents the prospect of future competition.<sup>11</sup>

With its Northern-oriented defence strategy, Canada forms part of this "co-operation with militarization" trend. Indeed, reinforcing sovereignty remains one of the core pillars of Canadian policy and includes plans to invest in equipment and training that would improve Northern surveillance and response capabilities.<sup>12</sup> The Canadian Forces, in conjunction with other government departments, regularly participate in regional military exercises as part of Operation Nanook. The latest instalment took place in August 2011 and involved responding to an actual, instead of a fictional, air disaster.<sup>13</sup> In addition, a recent poll revealed that Canadians consider the Arctic to be the nation's highest foreign policy priority. Many would like to see existing military resources shifted to defending northern interests, even if it comes at the expense of responding to conflicts abroad.<sup>14</sup> In all likelihood, the Canadian Forces — and their regional counterparts — will focus on supporting law enforcement, search and rescue, and promoting sovereignty in accordance with UNCLOS.<sup>15</sup>

<sup>10</sup> *Ibid* at 20-22.

<sup>11</sup> Bill Schiller, "China Warming Up to Be an Arctic Player," *Toronto Star* (1 March 2010), online: <<http://www.thestar.com/news/world/china/article/773148-china-warming-up-to-be-an-arctic-player>>.

<sup>12</sup> *Canada's Arctic Foreign Policy*, *supra* note 4 at 5-7. This policy trend is also evident in the *Canada First Defence Strategy* (May 2008) at 6, online: Department of National Defence <[http://www.forces.gc.ca/site/pri/first-premier/June18\\_0910\\_CFDS\\_english\\_low-res.pdf](http://www.forces.gc.ca/site/pri/first-premier/June18_0910_CFDS_english_low-res.pdf)>: "[C]hanges in the Arctic could also spark an increase in illegal activity, with important implications for Canadian sovereignty and security and a potential requirement for additional military support."

<sup>13</sup> See Department of National Defence, Operation Nanook 2011, online: Department of National Defence <<http://www.forces.gc.ca/site/feature-vedette/2011/08/nanook11/index-eng.asp>>.

<sup>14</sup> Jill Maloney, "In the Arctic, Canada Willing to Fight to Keep the True North Free," *Globe and Mail* (25 January 2011), online: <<http://www.theglobeandmail.com/news/politics/in-the-arctic-canada-willing-to-fight-to-keep-the-true-north-free/article1881683/>>. Interestingly, the poll also revealed that more Canadians were willing to take a strong stance on defending the North than their American counterparts.

<sup>15</sup> This role was analyzed specifically for the Canadian Navy in Office of the Judge Advocate General, "The Operational Legal Challenges of Naval Operations in Canada's Arctic Waters," Strategic Legal Papers Series Issue 3, online: Department of National Defence <<http://www.forces.gc.ca/jag/publications/oplaw-loiop/slap-plsa-3/index-eng.asp>>. Although this article conducted an extensive analysis of security concerns and corresponding operations in Arctic waters, it did not mention any IHL-related issues in the event tensions were to escalate.

Given the mix of resource exploitation and militarization, however, some level of uncertainty is unavoidable. Although the likelihood of outright armed conflict over resources or sovereignty in the Arctic appears remote, Arctic-centred conflict is a possibility, as is the prospect that conflict could spill into the Arctic from a conflict started elsewhere. In this light, the distinct restraints that IHL imposes on military activities in the Arctic context require consideration. Should fighting break out, IHL would become a relevant legal regime. This article therefore explores two aspects of the law of armed conflict that would pose challenges for militaries fighting in the Arctic. First, it discusses the specific prohibition of serious damage to the natural environment. Second, it considers broader IHL principles, notably proportionality and distinction, in relation to regional environmental factors. As we will show, the application of IHL to the unique and precarious Arctic environment would prohibit some military action that might be legal in armed conflict in other geographic regions.

#### THE PROHIBITION OF SERIOUS DAMAGE TO THE ENVIRONMENT

IHL provides specific protection for the environment from “widespread, long-term, and severe” damage. It also imposes an obligation to have “due regard” for the surrounding environment in the conduct of hostilities. A review of these principles demonstrates their particular relevance to any Arctic military operation.

#### THE WIDESPREAD, LONG-TERM, AND SEVERE THRESHOLD

While all armed conflicts invariably have some impact on the natural environment, IHL specifically prohibits such damage over a certain threshold. This concept was first expressed in the 1976 Convention on the Prohibition of Military or Any Hostile Use of Environmental Modification Techniques (ENMOD), which requires states “not to engage in military or any other hostile use of environmental modification techniques having widespread, long-lasting or severe effects as the means of destruction.”<sup>16</sup> Though significant for its influence on the development and interpretation of subsequent legal restrictions, this convention has limited application — it is only relevant

<sup>16</sup> Convention on the Prohibition of Military or Any Hostile Use of Environmental Modification Techniques, 10 December 1976, 1108 UNTS 151, Article 1 [ENMOD].

in cases of deliberate, and rarely used, environmental manipulation techniques.<sup>17</sup>

By far the most prominent protection for the environment under IHL is contained in Additional Protocol I to the Geneva Conventions.<sup>18</sup> Article 35(3) prohibits the use of “methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment.”<sup>19</sup> Similarly, Article 55 requires that “[c]are shall be taken in warfare to protect the natural environment against widespread, long-term and severe damage.”<sup>20</sup> The main element of these provisions is the repeated reference to damage that is widespread, long term, and severe. Beyond the implication that the harm contemplated must be of a particularly serious nature, Additional Protocol I unfortunately provides limited guidance on the precise meaning of this threshold. For example, it is unclear exactly how much territory has to be impacted to constitute “widespread” damage or how long this damage would have to last before it would be considered “long term.” Until an authoritative practical analysis of the provisions is conducted or states provide clarification through further agreement, their meaning must be discerned from discussions during negotiation as well as subsequent practice and commentary.<sup>21</sup> Most legal analysts agree that states intended the threshold to be extremely high since it requires the presence of all three conjunctive elements — widespread, long term, and severe — before coming into play.<sup>22</sup> Generally speaking, the damage caused would have to resemble a shock on “the balance of the ecosystem.”<sup>23</sup>

<sup>17</sup> Yoram Dinstein, *The Conduct of Hostilities under the Law of International Armed Conflict*, 2nd edition (Cambridge: Cambridge University Press, 2010) at 199.

<sup>18</sup> Protocol I Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflict, 12 December 1977, 1125 UNTS 3, 16 ILM 139 [Additional Protocol I].

<sup>19</sup> *Ibid.*, Article 35(3).

<sup>20</sup> *Ibid.*, Article 55.

<sup>21</sup> Vienna Convention on the Law of Treaties, 23 May 1969, 1155 UNTS 331, Articles 31-32.

<sup>22</sup> See, for example, Michael Bothe, Karl Josef Partsch, and Waldemar A Solf, *New Rules for Victims of Armed Conflict: Commentary on the Two Protocols Additional to the Geneva Conventions of 1949* (Leiden: Martinus Nijhoff Publishers, 1982) at 346.

<sup>23</sup> This terminology, found in the preparatory work to Additional Protocol I, *supra* note 18, was highlighted in Karen Hulme, *War Torn Environment: Interpreting the Legal Threshold* (Leiden: Martinus Nijhoff Publishers, 2004) at 20.

Apart from these initial observations, however, there is continuing debate as to the appropriate approach to interpretation. In drafting the provisions, states indicated that “long term” would refer to decades, but they did not specify anything relating to other aspects of the threshold.<sup>24</sup> While similar terminology was the subject of formal “understandings” during the negotiation of ENMOD, states appear to have rejected their direct application to the interpretation of Additional Protocol I.<sup>25</sup> This is in part because ENMOD is more lenient in not requiring all three elements to be present at the same time, as evidenced in the use of the disjunctive widespread, long-lasting, *or* severe.<sup>26</sup> Nevertheless, ENMOD remains an important starting point in analyzing the Additional Protocol I provisions. Karen Hulme suggests that the deliberate failure of states to adopt the ENMOD standard necessarily implies that they were seeking a higher threshold for Additional Protocol I.<sup>27</sup> The “decades-long” interpretation that was proposed for “long term” in Additional Protocol I is straightforward. To constitute “widespread,” Hulme argues the damage would have to exceed the several hundred square kilometres standard under ENMOD.<sup>28</sup> Moreover, only a significant disruption to environment and human life would qualify as “severe.”<sup>29</sup> Although Hulme’s approach is persuasive, some analysts are not convinced that Additional Protocol I should be interpreted so restrictively. For instance, Julian Wyatt argues that since no further interpretation has been provided by states, the existing ENMOD standard has been incorporated into the Additional Protocol I threshold by default.<sup>30</sup> As these differing approaches suggest, there has yet to be a definitive interpretation of the Additional Protocol I

<sup>24</sup> International Committee of the Red Cross (ICRC), *Commentary on the Additional Protocols of 8 June 1977 to the Geneva Conventions of 12 August 1949* (Dordrecht: Martinus Nijhoff, 1987) at para 1452, online: <<http://www.icrc.org/ihl.nsf/COM/470-750044?OpenDocument>>.

<sup>25</sup> See “Understandings Regarding the Convention [ENMOD],” in *Report of the Conference of the Committee on Disarmament, UNGAOR, 31st Sess, Supp No 27, vol 1, UN Doc A/31/27* (1976) at 91-92 [ENMOD Understandings]; Bothe, Partsch, and Solf, *supra* note 22 at 348.

<sup>26</sup> ENMOD, *supra* note 16 [emphasis added].

<sup>27</sup> Hulme, *supra* note 23.

<sup>28</sup> ENMOD Understandings, *supra* note 25 at 91.

<sup>29</sup> Hulme, *supra* note 23 at 89-90.

<sup>30</sup> Julian Wyatt, “Law-Making at the Intersection of International, Environmental, Humanitarian and Criminal Law” (2010) 59 *IRRC* 593 at 624.

threshold. Accordingly, it is possible to justify employing either the ENMOD standard or a more restrictive threshold.

It could also be argued that quantifying the threshold, in terms of the number of square kilometres affected by the damage, the number of years it persists, or the number of individuals affected is not as important as recognizing the purpose of the provision as a whole. The threshold is clearly directed at the most serious instances of environmental damage in wartime that would be recognizable when the integrity of some aspect of the environment is threatened or there is general condemnation from the international community. To the extent that it impacts on the application of the “widespread, long-term, and severe” threshold, slightly different wording in Article 55 of Additional Protocol I must also be taken into consideration. Unlike the Article 35(3) provision, Article 55 focuses attention on damage that would “prejudice the health or survival of the population.”<sup>31</sup> Not only is environmental harm caused by conflict an issue, but so too is its potential impact on the ability of human beings to inhabit that environment or make use of it in a particular way. This human-centred approach implies that, for the prohibition to become operative, there must be at least a link to, or identifiable impact on, a nearby human population. Although the most serious damage to the environment might be measured in relation to its direct impact on human life, this addition to Article 55 need not be interpreted too strictly. The wording can be viewed as merely recognizing the interrelationship between human beings and their environment. Any damage to the world’s ecosystems could be seen as affecting the quality of human life as a whole.

Furthermore, Article 55 provides that “care” be taken to “protect” the natural environment from serious damage.<sup>32</sup> An often neglected distinction between the Additional Protocol I provisions, this terminology has recently received greater consideration. It may ultimately place an additional onus on militaries during wartime to take reasonable steps to keep the environment safe from damage.<sup>33</sup> This requirement, in turn, may imply that proactive measures are required to prevent environmental damage where it is more likely to occur. As a consequence, slight differences in Article 55 may impose further requirements on militaries to choose methods of

<sup>31</sup> Additional Protocol I, *supra* note 16, Article 55(1).

<sup>32</sup> *Ibid.*

<sup>33</sup> Karen Hulme, “Taking Care to Protect the Environment against Damage: A Meaningless Obligation?” (2010) 92 *IRRC* 879 at 680-81.

warfare that respect environmental conditions and avoid serious consequences.

The customary law status of the “widespread, long-term, and severe” threshold should also be recognized. Initially, there was some debate among states over the basis for the Additional Protocol I provisions, as they represented novel formulations for the explicit protection of the environment under IHL. The United States and the United Kingdom, for example, were concerned about the possibility of a broad application that might result in outright prohibition of many military activities, such as the use of nuclear weapons.<sup>34</sup> It is, however, now appropriate to regard the Additional Protocol I provisions as having attained status as customary international law. This is partly evidenced by the inclusion of a prohibition on “widespread, long-term, and severe” damage to the environment in Rule 45 of the International Committee of the Red Cross’ (ICRC) authoritative study on the customary principles of IHL.<sup>35</sup> It is also apparent in the threshold’s wide dissemination. It should come as no surprise then that this standard is reflected in the Canadian Forces’ manual on the law of armed conflict.<sup>36</sup> Perhaps most important was the inclusion of intentionally causing “widespread, long-term, and severe damage” to the natural environment in the definition of war crimes under the Rome Statute of the International Criminal Court in 1998.<sup>37</sup> Not only is serious damage to the environment prohibited by treaty and customary rules governing the conduct of warfare, but it can also attract international criminal sanction.

In most circumstances, however, the “widespread, long-term, and severe” threshold continues to provide sufficient leeway for military operations. While these restrictions come into play in extreme circumstances, incidental environmental effects are able to escape the application of the Additional Protocol I threshold and related

<sup>34</sup> See Michael N. Schmitt, “Green War: An Assessment of the Environmental Law of International Armed Conflict” (1997) 22 *Yale J Int’l L* 1 at 74-75.

<sup>35</sup> Jean-Marie Henckaerts and Louise Doswald-Beck, *Customary International Humanitarian Law*, volume 1 (Cambridge: Cambridge University Press, 2005), Rule 45. However, the study notes that the United States and United Kingdom continue to object to its application to the use of nuclear weapons specifically.

<sup>36</sup> Office of the Judge Advocate General, *Law of Armed Conflict at the Operational and Tactical Levels* (Ottawa: Department of National Defence, 2001) at 53.

<sup>37</sup> See Rome Statute of the International Criminal Court, 17 July 1998, 2187 UNTS 3, Article 8(2)(b)(iv).



customary principles. These exceptions make a distinction between military activities that simply lead to unintended environmental consequences and those that would, by their very nature or as a function of the location of the attack, be expected to have a devastating impact. From an environmental perspective, it is not surprising that this approach is heavily criticized. Many commentators claim that the environment remains vulnerable in wartime as the threshold is difficult to surpass and, in more serious cases, is challenging to apply without further precision.<sup>38</sup> Admittedly, to provide strong protection for the environment in most situations, the law would have to be more restrictive. As will be seen, however, these concerns are less significant in an Arctic environment that is highly susceptible to “widespread, long-term, and severe” environmental damage. In that context, IHL serves to constrain military activities significantly, particularly when reinforced by the principle of “due regard” for the natural environment.

#### THE NEED FOR “DUE REGARD”

Explicit protection for the environment under IHL is not exclusive to the “widespread, long-term, and severe” threshold. The 1994 *San Remo Manual on International Law Applicable to Armed Conflict at Sea*, which is broadly regarded as authoritative, provides that “[m]ethods and means of warfare should be employed with due regard for the natural environment taking into account the relevant rules of international law.”<sup>39</sup> This standard includes a prohibition on “[d]amage to or destruction of the natural environment not justified by military necessity and carried out wantonly.”<sup>40</sup> Formulated differently than

<sup>38</sup> For arguments that this area of law is insufficiently restrictive, see Adam Roberts, “The Law of War and Environmental Damage,” in Jay Austin and Carl E Bruch, *The Environmental Consequences of War: Legal, Economic, and Scientific Perspectives* (Cambridge: Cambridge University Press, 2000) 47.

<sup>39</sup> Louise Doswald-Beck, ed, *San Remo Manual on International Law Applicable to Armed Conflicts at Sea*, International Institute of Humanitarian Law (Cambridge: Cambridge University Press, 1995), Article 44 [*San Remo Manual*]. The text of the manual is also available online: International Committee of the Red Cross <<http://www.icrc.org/eng/resources/documents/misc/57jmst.htm>>. The British defence manual describes the *San Remo Manual* as “a valuable reference work.” UK Ministry of Defence, *Manual of the Law of Armed Conflict* (Oxford: Oxford University Press, 2004) at para 13.2. More generally, the British defence manual’s chapter on maritime warfare (chapter 13) broadly relies on the *San Remo Manual* as authoritative on customary international law principles.

<sup>40</sup> *San Remo Manual*, *supra* note 39, Article 44.

Additional Protocol I, it focuses on recklessly causing any environmental damage in naval warfare. The need for “due regard” is understood as requiring a balancing of different interests.<sup>41</sup> The assessment of the potential for environmental damage is therefore crucial in conducting military operations.

In some respects, the obligation to have “due regard” appears less restrictive than the Additional Protocol I threshold. This is because it includes a justification for causing environmental destruction. It only requires that the environment be taken into consideration. As long as the damage caused has a legitimate and overriding military purpose, it may still be legally acceptable. Viewed from a different perspective, however, it is possible to conceive of situations where the balancing required under the “due regard” concept could weigh in favour of environmental preservation such that military action would not be justified. This is particularly the case where there is an awareness of heightened environmental risks or sensitivities. More importantly, the San Remo manual does not contain an express threshold requirement as does Additional Protocol I. Not doing so opens up the possibility that lesser damage — damage that falls short of the “widespread, long-term, and severe” threshold — caused by recklessness or without “due regard” for the environment could still be restricted.<sup>42</sup>

Interestingly, the notion of “due regard” is also reflected in the ICRC’s study but without any specific reference to military justification. Rule 44 seems to propose a more robust obligation than its San Remo counterpart when it states:

Methods and means of warfare must be employed with due regard to the protection and preservation of the natural environment. In the conduct of military operations, all feasible precautions must be taken to avoid, and in any event to minimise, incidental damage to the environment. Lack of scientific certainty as to the effects on the environment of certain military operations does not absolve a party to the conflict from taking such precautions.<sup>43</sup>

According to this particular formulation, the need for “due regard” relates to taking measures to limit the extent of any damage to the environment. It goes as far as to explicitly recognize the possibility

<sup>41</sup> *Ibid* at 84.

<sup>42</sup> This is alluded to in Hulme, *supra* note 33 at 686.

<sup>43</sup> *San Remo Manual*, *supra* note 39, Rule 44.

of incidental damage. Perhaps more surprising is that it seeks to eliminate any potential rationalization for environmental damage rooted in scientific uncertainty. Where military commanders are uncertain of the exact environmental consequences, they are still expected to take a precautionary approach. Some commentators remain skeptical of the inclusion in the ICRC's study of this particular "due regard" formulation as it may not be reflective of customary international law.<sup>44</sup> However, since it draws on a range of basic IHL principles and provides additional detail on the "due regard" concept, it cannot be ignored.

Irrespective of the exact wording of this "due regard" concept, it addresses wanton environmental destruction. In this respect, the concept reflects a goal similar to that of Additional Protocol I. This obligation poses significant challenges for militaries operating in the Arctic, as the next subsection shows.

#### *Potential Damage to the Arctic Environment*

However the foregoing legal principles are formally worded, one cannot ignore the potential for environmental damage in the Arctic in general, let alone during armed conflict. This environment is characterized by extreme conditions. In the coldest regions, air temperatures only reach as high as 4 degrees Celsius in July and fall below minus 60 degrees Celsius in winter. These temperatures slow chemical reactions and biological processes.<sup>45</sup> They lead to low soil temperatures and permafrost. The growing season for plants is extremely short — as little as three to four months in the Low Arctic and around two and a half months in the High Arctic.<sup>46</sup> These low temperatures also result in extensive ice cover on freshwater and marine habitats. This amount of ice promotes a large variety of physiological and behavioural adaptations in Arctic biota. Low light levels are common as the region receives only one-third to one-half of the annual solar radiation received in temperate climates.<sup>47</sup> Low absolute productivity and recent glaciations result in low species

<sup>44</sup> George H Aldrich, "Customary International Humanitarian Law: An Interpretation on Behalf of the International Committee of the Red Cross" (2005) 76 BYIL 515.

<sup>45</sup> Arctic Monitoring and Assessment Programme (AMAP), *AMAP Assessment Report: Pollution Issues* (Oslo: Arctic Monitoring and Assessment Programme, 1998) at 117, online: <<http://amap.no/>>.

<sup>46</sup> *Ibid.*

<sup>47</sup> *Ibid.* at 118.

diversity and often simple food chains. The Arctic Ocean is one of the most complex regions in the world's oceans and is unique among marine ecosystems for the presence of ice cover, a high proportion of continental shelves, and the influence of fresh water.<sup>48</sup> This situation is further complicated by the wide range of variations in climate and physical geography throughout the region's terrestrial, fresh-water, and marine environments.<sup>49</sup>

Numerous studies have shown that this exceptional environment is highly sensitive to contamination and other disruptions.<sup>50</sup> Persistent organic pollutants (POPs), for example, that find their way to the Arctic from other parts of the world disappear considerably more slowly than in southern areas because of colder temperatures.<sup>51</sup> Since these pollutants bio-accumulate and bio-magnify in Arctic conditions, they pose a serious threat to polar organisms.<sup>52</sup> The Arctic terrestrial environment is also susceptible to physical destruction, and the impact of human activity can be seen hundreds of years after the fact.<sup>53</sup> As one group of scientists has asserted,

[t]he Arctic basin plays a unique role in global environmental processes, giving a number of useful feedbacks for the Earth's climatic system. Low temperatures, intensity of atmospheric circulation and the availability of large ice-covered water systems are notable for high latitudes, quite unlike other areas of the globe (apart from Antarctica). The intensive industrial development of the northern hemisphere has led to significant environmental change in these regions ... Further adverse impacts on Arctic ecosystems may well lead to an increase in regional or even global scale negative consequences ... It is known that the ecosystems of the Arctic seas are

<sup>48</sup> *Ibid* at 128.

<sup>49</sup> For discussion of the variability of the environment across the region, see *ibid* at 9-23.

<sup>50</sup> A detailed analysis of the unique pollution dynamics in the Arctic is provided by Eiliv Steinnes, "Pathways and Effects of Contaminants in the Arctic," in Sarah J Woodin and Mick Marquiss, eds, *Ecology of Arctic Environments*, British Ecological Society (Oxford: Blackwell Science, 1997) 209.

<sup>51</sup> *Canadian Arctic Contaminants Assessment Report II*, volume I (Ottawa: Indian and Northern Affairs Canada, 2003) at 16; Arctic Monitoring and Assessment Programme, *AMAP Assessment 2009: Persistent Organic Pollutants* (Oslo: Arctic Monitoring and Assessment Programme, 2009), online: <<http://amap.no/>>.

<sup>52</sup> See, eg, BM Jenssen, "Effects of Environment Changes and Pollution on Arctic and Antarctic Organisms," Part A: Molecular and Integrative Physiology (2010) 157 *Comparative Biochemistry and Physiology* S40-S41.

<sup>53</sup> AMAP, *supra* note 45 at 118.

considerably more vulnerable than the ecosystems of other seas. The processes that clean the Arctic Ocean are slower. Marine organisms of the Arctic ecosystem live in the polar climate, where the vegetation period is seriously restricted. Some feedback mechanisms operate with significant time delays and the capacity to neutralize the effects of human activity appears to be weak. In addition to these reasons the Arctic ecosystem has specific boundary conditions connected with the sea ice boundary that reduces its ability to recover.<sup>54</sup>

These assertions are supported by assessments of the impact of industrial development associated with the oil and gas sector in the Arctic. In a report from the US National Research Council, it was noted that there could be effects on hydrologic processes, vegetation, and animal populations up to several kilometres from the physical footprint of a structure. The Arctic tundra has proven to be easily impacted by vehicle travel.<sup>55</sup> The report concludes by proposing measures needed to mitigate the impact of this development on the surrounding environment. The potential for negative effects is compounded by the strain placed on the Arctic environment by global climate change.<sup>56</sup>

These assessments of the environmental impact of contaminants and increased development in the region provide insight into the “widespread, long-term, and severe” damage that would be likely to occur as a result of any military action. Militaries fighting on land or at sea would have to take into account unique regional considerations. Any increased military activity, even in peacetime, could have a direct impact on the environment. For example, the use of military vehicles could add to the erosion of the Arctic tundra. It is not surprising that in the United States there have already been concerns expressed about the environmental consequences of the peacetime military development of radar stations, air traffic control, and warning systems, and support for ground forces and naval patrols using

<sup>54</sup> K Ya Kondratyev, VF Krapivin, and GW Phillips, “Arctic Basin Pollution Dynamics,” in Leonid P Bobylev, Kirill Ya Kondratyev, and Ola M Johannessen, eds, *Arctic Environment Variability in the Context of Global Change* (Chichester, UK: Praxis Publishing, 2003) 309 at 309-10.

<sup>55</sup> National Research Council, *Cumulative Environmental Effects of Oil and Gas Activities on Alaska’s North Slope* (Washington, DC: National Academies Press, 2001) at 5.

<sup>56</sup> See, eg, John E Walsh, “Climate of the Arctic Marine Environment” (2008) 18:2 Ecological Applications S3; F Stuart Chapin III et al, “Responses of Arctic Tundra to Experimental and Observed Changes in Climate” (1995) 76:3 Ecology 694.

nuclear submarines.<sup>57</sup> Increased naval traffic in the area could adversely affect marine ecosystems. Although on a lower scale, similar risks have been identified in connection with an increase in commercial shipping in newly accessible ice-free Arctic straits.<sup>58</sup>

The risks posed by the use of any munitions would be even more troubling. Explosions could leave chemicals and oil seeping into the ocean floor or allow them to be carried away by currents. Since these chemicals would persist for longer periods than in many other environments, they would pose an ongoing danger to Arctic aquatic life, including marine mammals. As we have also seen, it would be more difficult for the region's environment to regenerate.

Another likely cause of damage that might meet the "widespread, long-term, and severe" threshold would be oil spills. Sunken ships could result in oil seepage as could attacks on oil infrastructure aimed at accessing untapped reserves in the region. Research on the impact of previous oil spills in the region sheds light on these possible consequences. Slower growth rates and shorter growing seasons make the rate of biological recovery from oil damage much slower than in other regions. As a consequence, the effects of oil pollution may be more severe and persistent in the Arctic environment than elsewhere.<sup>59</sup> In particular, oil damage tends to be more pronounced in near-shore ecosystems, including soft-sediment environments in sheltered bays where higher concentrations of oil can be found more than eight years following a spill.<sup>60</sup> Oil released under ice cover can cause melting. Droplets that collect under ice can form a slick and spread outwards, significantly increasing the area affected by the spill.<sup>61</sup> It should also be noted that as much as 60 percent of the ecological impact of oil spills in the Arctic is

<sup>57</sup> Norman A Chance and Elena N Andreeva, "Sustainability, Equity and Natural Resources in Northwest Siberia and Arctic Alaska" (1995) 23:2 Ecology 217 at 229.

<sup>58</sup> Discussions have centred around improving overall capabilities of ships to operate in Arctic waters. See United States Arctic Research Commission (USARC), *The Arctic Ocean and Climate Change: A Scenario for the US Navy* (Arlington, VA: USARC, 2002) at 15, online: <[http://www.arctic.gov/publications/arctic\\_and\\_climate\\_change.pdf](http://www.arctic.gov/publications/arctic_and_climate_change.pdf)>.

<sup>59</sup> AMAP, *supra* note 45 at 661.

<sup>60</sup> Thomas A Dean and Stephen C Jewett, "Habitat-Specific Recovery of Shallow Subtidal Communities Following the Exxon Valdez Oil Spill" (2001) 11:5 Ecological Applications 1456.

<sup>61</sup> AMAP, *supra* note 45 at 671-72.

transmitted indirectly.<sup>62</sup> This impact relates to the long-term effects on the habitat and the survival of different species.

By far the most significant issue with respect to oil contamination would be the complications associated with clean-up efforts in remote locations. The territory is so vast that it would lengthen the time needed to respond to a spill, allowing the oil to spread further before it could be cleaned up. There would also be fewer locations available from which to launch recovery missions.<sup>63</sup> Up to 30 percent of oil can be recovered in ideal conditions, but many scientists suspect that the figure would be much lower in the Arctic.<sup>64</sup> Buried oil could persist for decades as ice could envelop and transport it considerable distances. Some oil would also sink and contaminate the seafloor, making it impossible to remedy.<sup>65</sup> In addition, there is a great deal of concern that current clean-up techniques have not been designed or tested to operate effectively in the Arctic environment. This situation has prompted increased research into regional responses to oil spills.<sup>66</sup> During Operation Nanook in 2010, the Canadian Forces participated in a simulated emergency response to a petrochemical leak.<sup>67</sup> This operation demonstrated that states are already aware of the environmental risks posed by the presence of oil infrastructure in the Arctic. These risks would only be heightened in the context of an armed conflict.

There are also states capable of deploying nuclear submarines to the region. Engaging in warfare with submarines of this nature could lead to radioactive fallout in the Arctic seas. Due to extreme temperatures and seasonal fluctuations, the effects of radionuclides on the environment and their transfer to Arctic organisms are highly complex processes that have only recently received substantial

<sup>62</sup> RT Paine et al, "Trouble on Oiled Waters: Lessons from the Exxon Valdez Oil Spill" (1996) 27 *Ann Rev Ecology & Systematics* 197 at 227.

<sup>63</sup> Michael Torrice, "Science Lags on Saving the Arctic from Oil Spills" (2009) 325 *Science* 1335.

<sup>64</sup> *Ibid.*

<sup>65</sup> Jeffrey Short and Susan Murray, "A Frozen Hell" (2011) 472 *Nature* 162 at 162-63.

<sup>66</sup> USARC, *Advancing Oil Spill Response in Ice-Covered Waters* (Arlington, VA: USARC, 2004), online: <[http://www.arctic.gov/publications/oil\\_in\\_ice.html](http://www.arctic.gov/publications/oil_in_ice.html)>.

<sup>67</sup> Department of National Defence, "Operation Nanook Reaches Successful Conclusion," News Release (30 August 2010), online: Government of Canada <<http://www.forces.gc.ca/site/news-nouvelles/news-nouvelles-eng.asp?cat=00&id=3521>>.

scientific consideration.<sup>68</sup> The environmental effects of such fallout would be significant in any part of the world, but their consequences in the Arctic would be even more difficult to predict.

States must refrain from using methods of warfare that are intended, or may be expected, to cause damage beyond a certain threshold in order to comply with the standards of Additional Protocol I. While a commander's intentions would have to be addressed in each specific instance, an individual cannot be wilfully blind to well-recognized environmental risks. States are aware of the potential risks — this is evident in their efforts to address Arctic-specific environmental issues outside of armed conflict. The Arctic Council engages in significant environmental assessment and research programs, which takes place under the auspices of the Arctic Monitoring and Assessment Programme (AMAP).<sup>69</sup> A prime example of the Arctic Council's work is the preparation of a comprehensive study on the nature of the environment and the impact of climate change in the Arctic.<sup>70</sup> Also relevant is the Working Group on Protection for the Arctic Marine Environment (PAME), which conducts research and develops strategies for the protection of Arctic species.<sup>71</sup> In addition to these scientific research programs is recognition of environmental dangers at the policy level. Among Canadian priorities in the Arctic are the promotion of ecosystem-based management and enhancing efforts on these pressing environmental issues.<sup>72</sup>

In analyzing the protection of the environment under IHL, some military commentators have raised concerns that an obligation to minimize damage could lead to uncertainty and thereby unnecessarily constrain military activity.<sup>73</sup> In the Arctic context, however,

<sup>68</sup> AMAP, *AMAP Assessment 2009: Radioactivity in the Arctic* (Oslo: AMAP, 2009), online: <<http://amap.no/>>.

<sup>69</sup> See Arctic Council, "Arctic Monitoring and Assessment Programme (AMAP)," online: Arctic Council <<http://www.arctic-council.org/index.php/en/amap>>.

<sup>70</sup> Arctic Climate Impact Assessment (ACIA), *Arctic Climate Impact Assessment* (Cambridge: Cambridge University Press, 2005), online: <<http://www.acia.uaf.edu/>>.

<sup>71</sup> See Arctic Council, "PAME: Protection of the Arctic Marine Environment," online: Arctic Council <<http://www.arctic-council.org/index.php/en/pame>>.

<sup>72</sup> *Canada's Arctic Foreign Policy*, *supra* note 4 at 5.

<sup>73</sup> For example, it has been suggested that "[a]n absolute ban on environmental damage caused by military operations is inconceivable. War by definition is a 'no holds barred affair.' Thus, the real issue is how best to minimize the environmental impact of military operations without constraining the military commander with



there should be less uncertainty or difficulty applying the law in the course of hostilities than in a less sensitive environment. As demonstrated, many states have recognized the high degree of vulnerability in the physical environment and in the organisms in this region. Although the exact consequences of a particular attack might not be known with scientific certainty, there is sufficient global knowledge of environmental susceptibilities in the region to require the exercise of caution. Disruptions to the Arctic environment spread across more territory, tend to persist longer, and have more devastating impacts on the region, which all take longer to recover from than in other places in the world. Applying the “widespread, long-term, and severe” threshold, it is conceivable that damage would last for decades, spread over more than several hundred square kilometres, and cause significant disruption to the environment and human life.

Similarly, failing to avoid environmental damage where it can easily occur in the Arctic would be problematic, since Additional Protocol I and the San Remo manual stipulate obligations to exercise “care” or have “due regard.” The fragile nature of the Arctic environment itself and the greater potential for damage in this area should encourage states to refrain from certain wartime activities on the basis of these obligations. How could a state ignore that, given the fragility of Arctic waters and highly complex ecosystems, almost any military action could be considered wanton and in conflict with the need to exercise “due regard”?

Furthermore, there are potential restrictions relating to the location of military activities. Specific to naval operations under the San Remo manual is a provision encouraging parties to agree not to engage in hostile actions in marine areas containing rare or fragile ecosystems or the habitat of endangered species or other forms of marine life.<sup>74</sup> This encouragement would undoubtedly apply to the unique maritime environment of the Arctic where efforts are already underway to ensure its protection and sustainability in the face of

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policies that have little chance of serious consideration in wartime. But most importantly, we must not create uncertainty or risk aversion in the minds of our commanders regarding environmental considerations that could be exploited by their adversaries.” See William H Wright, “Naval Warfare and the Environment,” in Richard Grunawalt, John E King, and Ronald S McClain, eds, *Protection of the Environment during Armed Conflict and Other Military Operations* (Newport, RI: US Naval War College, 1996) 35 at 35.

<sup>74</sup> *San Remo Manual*, *supra* note 39, Article 11.

increased development.<sup>75</sup> The provision demonstrates the desire of states to preserve the most sensitive areas of the natural environment, even in carrying out military actions. It also reinforces the proposition that precarious regions, such as the Arctic, enjoy a form of specially protected status. The provision is nonetheless fairly deferential to states and merely encourages them to agree to protect these areas rather than establishing an outright prohibition.

The connection made under Article 55 between the protection of the natural environment during warfare and the human population also remains relevant. One might be tempted to consider remote areas, such as the Arctic, as being more preferable locations for armed conflict precisely because they are more sparsely populated. However, this thinking does not reflect the increased awareness of, and concern associated with, the destruction and wide-ranging, long-term effects caused by modern armed conflicts. Indeed, the IHL environmental provisions are emblematic of developing legal constraints on warfare directed at adverse consequences beyond immediate threats to the civilian population. No matter where it occurs, the dangers of armed conflict cannot be treated lightly, but this concern is particularly warranted in vulnerable regions. Accordingly, the restrictions placed by IHL on methods of warfare in the Arctic are in no way undermined where military actions occur in areas completely isolated from human settlement. For example, Inuit peoples who inhabit the Arctic may be affected, even though they may not be directly adjacent to a particular attack or adverse

<sup>75</sup> For a discussion of the need to preserve the distinct Arctic marine ecosystem in the face of ongoing challenges, see, eg, Arctic Council, *Arctic Marine Strategic Plan* (24 November 2004) at 5-7, online: <[http://www.pame.is/images/stories/AMSP\\_files/AMSP-Nov-2004.pdf](http://www.pame.is/images/stories/AMSP_files/AMSP-Nov-2004.pdf)>. At the same time, it should be recognized that the Arctic is not the pristine environment portrayed in the popular imagination. The Arctic is not immune from much of the pollution and resource degradation experienced in other parts of the world. As David Carron has noted, there are various images regarding the current and future state of the Arctic. It is at once an impassable and remote area, a ring of water where nations focus on bilateral relations, or a semi-enclosed area with increasing activity and governance challenges (as well as what might be considered symbolic militarization). See David D Caron, "Politics, Law and Three Images of the Arctic," in *Proceedings of the 102nd Annual Meeting of the American Society of International Law*, Washington, 2008 (Washington: ASIL, 2008) 157 at 158. Considering any of these images independently does not truly address the extent to which the political and legal landscape is changing. The first image of the Arctic as an impassable area will never be eliminated, but critically evaluating all other images will be necessary to understanding the role of law in the region.

environmental consequence. There is scientific evidence that Northern settlements are particularly susceptible to environmental intrusions. In a comprehensive report, the Canadian Department of Indian and Northern Affairs notes that contaminants enter the food web and bio-accumulate in the Arctic. Since a larger proportion of Northerners rely on traditional food sources than their southern counterparts, they are exposed to a higher degree of contaminants.<sup>76</sup> Similarly, any pollution caused by military activity could have an adverse impact on human health in the region. As a prime example, contamination of fishing grounds would have a significant impact.

It is also worth considering the broader integration of Inuit livelihoods, traditions, and culture within their surrounding environment. As the chair of the Inuit Circumpolar Conference noted in 2004, the “Inuit generally look holistically on issues” and “[c]ulture, economy and environment are all woven into our tapestry.”<sup>77</sup> She went on to suggest that although the Inuit are small in number, they “use and occupy huge areas of land.”<sup>78</sup> Recognizing the interconnectedness of the Inuit and their environment, she remarked that “people have lost the understanding that their own human activity can have severe negative impacts on their neighbours,” and it is these “negative impacts that challenge our efforts to preserve in our homeland, our cultural heritage.”<sup>79</sup> Potential military operations in the Arctic could affect the balance between Inuit culture and the environment. Given the high level of interaction between the two, environmental damage is likely to have a direct impact on the lives of the Inuit population.

It should finally be noted that in the separate but related legal regime of international human rights law, states have also agreed to restrictions on military activities in the UN Declaration on the Rights of Indigenous Peoples.<sup>80</sup> Although originally opposed to

<sup>76</sup> *Canadian Arctic Contaminants Assessment Report II*, *supra* note 51 at 16.

<sup>77</sup> Sheila Watt-Cloutier, “Bringing Inuit and Arctic Perspectives to the Global Stage: Lessons and Opportunities,” in Robert O van Everdingen, ed, *Proceedings of the Fourteenth Inuit Studies Conference, Calgary, 2004* (Calgary: Arctic Institute of North America, 2004) 301 at 302, online: <<http://pubs.aina.ucalgary.ca/aina/14thisproceedings.pdf>>.

<sup>78</sup> *Ibid.*

<sup>79</sup> *Ibid.*

<sup>80</sup> United Nations Declaration on the Rights of Indigenous Peoples, GA Res 61/295, UNGAOR, 61st Sess, Supp No 53, UN Doc A/RES/61/295 (2007) [UNDRIP].

aspects of the declaration, Canada eventually endorsed this “soft law” instrument in November 2010.<sup>81</sup> The declaration does not permit military activities on lands of indigenous peoples without a public interest justification or prior agreement. Before using their lands for military activities, there is a requirement that states consult with indigenous peoples.<sup>82</sup> This obligation reinforces IHL limitations on environmental destruction as it relates to indigenous Arctic inhabitants. Although it is unclear to what extent these provisions would apply in times of armed conflict (as Canada has implied in public statements), they suggest still further restrictions on a state’s potential military activities in the Arctic.<sup>83</sup>

#### BROADER IHL PRINCIPLES AND REGIONAL ENVIRONMENTAL FACTORS

In addition to the specific tests for environmental harm that are contained in Additional Protocol I and the San Remo manual, broader principles of IHL also have a bearing on warfare in the Arctic context.

#### PROPORTIONALITY

IHL establishes requirements for the selection of military targets. Principal among them is the requirement that the incidental effects of attacks be proportionate to their overall military objectives. In assessing proportionality, various factors must be taken into consideration with a focus on harm caused to the civilian population. While it does not receive the attention it should in practice, the environment remains a relevant aspect of target selection. In the *Legality of the Threat or Use of Nuclear Weapons*, the International Court of Justice affirmed that “[s]tates must take environmental considerations into account when assessing what is necessary and proportionate in the pursuit of legitimate military objectives.”<sup>84</sup> This advisory opinion demonstrates that protection of the environment is part

<sup>81</sup> “Canada Endorses Indigenous Rights Declaration,” *CBC News* (12 November 2010), online: CBC News <<http://www.cbc.ca/news/canada/story/2010/11/12/indigenous-declaration.html>>.

<sup>82</sup> UNDRIP, *supra* note 80, Article 30.

<sup>83</sup> Aboriginal Affairs and Northern Development Canada, *Canada’s Statement of Support on the United Nations Declaration on the Rights of Indigenous Peoples* (12 November 2010), online: <<http://www.ainc-inac.gc.ca/ap/ia/dcl/stmt-eng.asp>>.

<sup>84</sup> *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, [1996] ICJ Rep 226 at 242.

of the broader IHL framework and not confined solely to express provisions with extremely high thresholds. Thus, environmental factors assume a great deal of significance in the assessment of military targets in the Arctic. The exceptional characteristics of this region necessarily alter the proportionality calculation that takes place in conflicts in most other regions.

Proportionality is intimately connected to the concept of military necessity. As it is often articulated, militaries must refrain from an attack where harm to the civilian population, and indirectly the environment, would be excessive in relation to the anticipated military advantage.<sup>85</sup> It is much easier to articulate this concept than it is to apply. What constitutes a “military advantage” inevitably requires some form of value judgment, and harm may be difficult to gauge.<sup>86</sup> Some commentators argue that military advantage can be interpreted too broadly so as to provide justification for almost any harm.<sup>87</sup> However, this does not necessarily mean that military objectives cannot be selected in a way that minimizes collateral damage and loss of life while still targeting the most highly valued elements of an adversary’s military potential.<sup>88</sup> An assessment of proportionality must distinguish disproportionate harm from the collateral damage that is permissible in all armed conflicts.<sup>89</sup>

Making these determinations already poses challenges with respect to civilians and civilian objects, but it becomes more complex with the addition of environmental factors. This is particularly so given that assessing the likely impact of an attack on the environment requires at least rudimentary scientific awareness. Significantly,

<sup>85</sup> Additional Protocol I, *supra* note 18, Article 57.

<sup>86</sup> Schmitt, *supra* note 34 at 56.

<sup>87</sup> See Schmitt, *supra* note 34 at 54. For a critical discussion of the predominance of military necessity in IHL, see generally Chris Jochnick and Roger Normand, “The Legitimation of Violence: A Critical History of the Laws of War” (1994) 35 *Harv Int’l LJ* 49.

<sup>88</sup> Understanding concepts such as “military objectives” or necessity is discussed in detail by Jefferson D Reynolds, “Collateral Damage on the Twenty-First Century Battlefield: Enemy Exploitation of the Law of Armed Conflict, and the Struggle for a Moral High Ground” (2005) 56 *AFL Rev* 1 at 82-87. It is also worth noting that military necessity does not trump specific IHL prohibitions, including Article 35(3) of Additional Protocol I. As the British Defence Manual states: “Necessity cannot be used to justify action prohibited by law.” See British Ministry of Defence, *supra* note 39 at para 2.3.

<sup>89</sup> Michael Bothe et al, “International Law Protecting the Environment during Armed Conflict: Gaps and Opportunities” (2010) 92 *IRRC* 569 at 577-78.

decision making may take place in the heat of battle without sufficient time to assess accurately what will occur. In many cases, the consequences of an attack on the environment will only become apparent in hindsight.<sup>90</sup>

While there are challenges associated with accounting for environmental factors in the proportionality calculation, they are not insurmountable. Despite the potential for different interpretations, proportionality serves as a practical guideline in all military targeting. There is no reason to believe that adequate consideration cannot also be given to the environment. While there are situations where environmental damage might be appropriately termed collateral damage, it should not automatically be dismissed in this manner. IHL makes clear that consideration of the potential for environmental damage is essential in the initial assessment of the proportionality of a proposed attack. And it is also worthy to note that there is increased awareness, on the part of soldiers and commanders, of the long-term effects of military operations and the need for environmental stewardship and pollution prevention, or what has been termed an “ethos of responsibility.”<sup>91</sup> This recognition suggests that environmental considerations are already integrated into military planning and target assessment.

Applying the proportionality principle in the Arctic leads to various complications in assessing targets. Since the likelihood of adverse environmental effects of most attacks is considerably higher than in other environments, the possibility of such attacks would weigh heavily against military advantage on the proportionality fulcrum. Practically speaking, scientific knowledge regarding the exact consequences of these attacks is less important than a broad-based awareness of the precarious nature of the Arctic environment. This awareness should be sufficient to restrict military operations. For example, attacking an oil installation would pose serious risks to an already fragile environment. While disrupting oil supplies may be of military significance, it is not likely to outweigh the harm that could be caused indirectly to the civilian population by way of environmental impact. By contrast, let us take the example of the potential environment effects of the destruction of an average size,

<sup>90</sup> Mark JT Caggiano, “The Legitimacy of Environmental Destruction in Modern Warfare: Customary Substance over Conventional Form” (1993) 20 BC Env’t Aff L Rev 479 at 497.

<sup>91</sup> See, eg, William M Arkin, “The Environmental Threat of Military Operations,” in Grunawalt, King, and McClain, *supra* note 73, 116 at 131.

non-nuclear vessel. Some adverse environmental consequences of pollutants entering the sea may not represent “widespread” damage within the meaning of Additional Protocol I. Nevertheless, there is no reason why the adverse effects of the attack could not still be considered disproportionate in relation to the military advantage gained where, for example, the significance of the vessel is not great. In these and similar cases, environmental impacts in the Arctic could weigh heavily against engaging such targets. On the other hand, it is conceivable that a high degree of military utility could tilt the scales in the opposite direction.

The important point is that environmental factors must have a prominent presence in the minds of military commanders and their legal advisors in assessing Arctic targets. Complicating the proportionality calculation is the fact that scientific knowledge or certainty regarding environmental effects may not be available at the time. Such absence of information, however, does not relieve those responsible from meeting their basic legal obligations. In light of these environmental considerations, the best approach is probably a restrictive one, suggesting that most military action would ultimately be circumscribed in the Arctic once the environment is factored into the target assessment.

#### THE ENVIRONMENT AS “CIVILIAN OBJECT”

A related principle of IHL that has bearing on the conduct of Arctic hostilities is the avoidance of civilian objects during an attack. Deeply entrenched in customary international law, this principle is articulated in Article 48 of Additional Protocol I. It stipulates that there must be a distinction made between military and civilian objects in the course of an attack.<sup>92</sup> This principle is also supported by Article 57, which requires that precautionary measures be taken to spare civilian objects.<sup>93</sup> There is wide recognition that this protection of civilian objects also applies to the environment.<sup>94</sup> Consequently, militaries are prohibited from attacking environmental assets that are not related to an opposing side’s war effort. A naval vessel could

<sup>92</sup> Additional Protocol I, *supra* note 18, Article 48.

<sup>93</sup> *Ibid*, Article 57.

<sup>94</sup> See, eg, International Committee of the Red Cross, *Guidelines for Military Manuals and Instructions on the Protection of the Environment in Times of Armed Conflict* (30 April 1996), online: International Committee of the Red Cross <<http://www.icrc.org/eng/resources/documents/misc/57jn38.htm>> [*Guidelines for Military Manuals*].

not, for example, directly target glaciers, fragile coastlines, or nearby native communities in the Arctic.

Of course, protection for the environment as a civilian object is far from absolute. Civilian objects can be transformed by use into military ones, and this possibility is particularly relevant in the environmental context. For example, establishing a military outpost on that same fragile coastline would terminate its civilian protection from deliberate targeting. Similarly, using the Arctic landscape or seas to provide cover for military assets would also change their status. Recent commentary on the protection of the environment as a civilian object therefore suggests that this protection must go further. For example, any military presence might have to be excluded from environmentally sensitive areas in order to extend their civilian protection and prevent loss of their immunity from attack in the future.<sup>95</sup>

In addition, implying that environmental protection is synonymous with civilian safeguards is a purely anthropocentric approach. It is possible to debate whether principles designed for civilian preservation can truly translate into real protection for the environment itself.<sup>96</sup> For present purposes, however, the protection of the environment as a civilian object provides an additional legal constraint and seems to preclude any military actions directed against, or that would negatively affect, the Arctic environment. This notion is also apparent from Article 54(2) of Additional Protocol I, which provides that

[i]t is prohibited to attack, destroy, remove or render useless objects indispensable to the survival of the civilian population, such as foodstuffs ... crops, livestock, drinking water installations and supplies and irrigation works, for the specific purpose of denying them for their sustenance value to the civilian population or to the adverse Party, whatever the motive, whether in order to starve out civilians, to cause them to move away, or for any other motive.<sup>97</sup>

<sup>95</sup> Bothe et al, *supra* note 89 at 577. For some of the other challenges facing recognition of the environment as a civilian object, see Betsy Baker, "Legal Protections for the Environment in Times of Armed Conflict" (1992) 33 Va J Int'l L 351 at 364.

<sup>96</sup> The dominance of the anthropocentric approach in matters of IHL and the environment is considered in Schmitt, *supra* note 34 at 13.

<sup>97</sup> Additional Protocol I, *supra* note 18, Article 54(2).



This prohibition takes on particular significance in the Arctic where the Inuit population is highly dependent on the surrounding natural environment for its survival. Military activities that would adversely affect the availability of food sources would therefore seem to be restricted.

IHL's protection of cultural property is also potentially relevant to the environment, especially in the case where natural factors constitute "the cultural or spiritual heritage of peoples."<sup>98</sup> It is not difficult to make a link between the heritage of Inuit peoples and certain aspects of the Arctic environment. Indeed, despite the emphasis on expanding military defence, most Canadians place a great deal of emphasis on their connection to the Northern landscape. This connection is reflected in Canada's Arctic Foreign Policy Statement, which highlights the need for "healthy and productive ecosystems" and prioritizes "protecting our environmental heritage."<sup>99</sup> It would therefore be difficult to justify an attack on widely recognized natural wonders in the Arctic since any offensive would amount to the destruction of significant aspects of Canada's cultural heritage (although this is admittedly more of a stretch for Southerners than it is for Northerners).

Taken together, all of these broader principles relating to the environment as a civilian object would impose considerable further restrictions on the range of permissible military activities in the Arctic. They reflect the overwhelming regional environmental considerations that would come into play in the Arctic. As environmental factors are assessed pursuant to these broader principles of IHL, it becomes evident that a good number of traditional war-fighting activities would not meet minimum standards in the Arctic.<sup>100</sup>

This conclusion is problematic. It is often suggested that IHL will be ignored by war-fighters if it becomes unrealistic. Furthermore,

<sup>98</sup> See *Guidelines for Military Manuals*, *supra* note 94; Michael D Diedrich, Jr, "Law of War and Ecology: A Proposal for a Workable Approach to Protecting the Environment through the Law of War" (1992) 136 *Mil L Rev* 137 at 146-48.

<sup>99</sup> *Canada's Arctic Foreign Policy*, *supra* note 4 at 3-4.

<sup>100</sup> While not the primary focus of this article, the nature of the Arctic environment may be relevant to IHL beyond restrictions on the means and methods of warfare. An area of concern for compliance with IHL is in the treatment of detainees where inhospitable Arctic conditions and a lack of infrastructure would pose particular challenges. States are expected to ensure humane treatment for detainees, including medical assistance and a favourable climate for internment. Convention (III) Relative to the Treatment of Prisoners of War, Geneva, 12 August 1949, 75 UNTS 135, Articles 13, 15, 22, 30-31, and 46. Clearly, it would be more difficult to provide these basic necessities while adrift in Arctic waters or

if the law is obeyed, it might cause the feuding parties to carry out military actions outside of the Arctic, spreading what might otherwise have been a geographically limited war. Clearly, the lesson is that peaceful means should be used to resolve Arctic conflicts. If warfare does break out in the Arctic, the environmental and legal results could well be catastrophic. Nonetheless, burying one's head in the sand (or ice) is not an option.

## CONCLUSION

The Arctic is a unique and exceptionally fragile region. States should continue their co-operative approach to address the challenges it poses, and UNCLOS provides a suitable legal framework for doing so. As recent commentary suggests, perhaps it is time to start exploring the means of developing an Arctic presence that is less focused on the military.<sup>101</sup> Although the stated purpose of the current military build-up in the region is generally constabulary, it would be foolish to dismiss its potential significance too quickly. Arctic states are becoming more assertive in an area with potential that is only just beginning to be understood. The implications of IHL for potential conflict in the Arctic necessitate a more proactive analytical approach, particularly in light of the underlying insecurities in the region. Moreover, discussing the issue should not be considered tantamount to preparing for military action in the region. Being aware of the implications now enables states to be responsible in the future. Realizing the extent of the restrictions that IHL would impose in the event of Arctic conflict, in order to protect the environment, ultimately reinforces the importance of co-operative approaches.

As demonstrated, the particular vulnerability of the Arctic environment to human activity is relevant to the application of IHL in the region. It would most likely preclude many war-fighting actions that might reasonably be contemplated elsewhere. IHL expressly prohibits the use of various means and methods of warfare that may

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at an isolated outpost. While the notion of Arctic detainees may seem somewhat fanciful, it underscores the range of obligations IHL imposes and their potential consequences in this regional context.

<sup>101</sup> Canadian International Council, "Should Canada Strengthen Its Military Presence in the Arctic?" Canadian International Council, online: <<http://www.opencanada.org/rapid-response/should-canada-strengthen-its-military-presence-in-the-arctic/>>.

be expected to cause serious damage to the natural environment, which comprises the prohibition of “widespread, long-term, and severe” damage to the environment and the obligation to have “due regard.” In the Arctic context, where the impact of human activity is more significant and lasts longer, there is real potential for contravening both this prohibition and obligation. Also relevant are broader principles of IHL that require that the environment be taken into consideration when targeting. Regional factors would weigh heavily in the assessment of proportionality or the protection of civilian objects, and these factors should provide an additional layer of protection for the Arctic environment in wartime. Any environmental damage would have a significant effect on Arctic inhabitants.

States need to pay greater attention to the manner in which IHL would impose overarching legal constraints on any Arctic conflict. The same Canadian public that is eager to defend Northern interests must also consider the Arctic a pristine and protected environment central to the country’s identity. When considering the significance of IHL to the Arctic, these perspectives seem almost incompatible. Where does this apparent paradox leave us?

At the very least, the Canadian Forces — commendably, a military that takes IHL seriously — should show leadership in planning and training for legal means and methods of warfare in the Arctic. To begin with, military doctrine and training could address the legal constraints and potential means of mitigating environmental harm through appropriate targeting and choice of weaponry. However, beyond highlighting the need for military doctrine and training on fighting in the Arctic, this article invites further reflection along three lines. Canadians and their Arctic neighbours need to consider (1) the extent to which the militarization of the Arctic increases the possibility of armed conflict there; (2) the difficulty and impracticality of engaging in armed conflict in a legal manner in that region; and (3) the catastrophic consequences that could result from not fighting in a legal manner in the Arctic, if fighting there must be.

### *Sommaire*

Alors qu’il appert à juste titre que le droit de la mer est le régime juridique international le plus approprié pour le règlement des différends dans l’Arctique, il n’en demeure pas moins que cette région subit une ère non seulement de changement climatique

mais aussi de militarisation. Or il est curieux que peu d'attention ait été accordée aux contraintes qu'imposerait le droit international humanitaire (DIH) en cas de conflit armé dans l'Arctique — aussi peu probable soit-il. Ces contraintes comprennent notamment l'interdiction de causer des dommages étendus, durables et graves à l'environnement naturel en vertu du Protocole additionnel I aux Conventions de Genève, ainsi que l'obligation connexe de “ten[ir] dûment compte” de l'environnement naturel, obligation reconnue, par exemple, par le *Manuel de San Remo sur les conflits armés en mer*. De même, des facteurs environnementaux doivent jouer dans l'évaluation militaire des cibles en vertu des principes généraux du DIH liés au ciblage. Les auteurs commentent l'application de ces diverses obligations juridiques dans le contexte de l'Arctique. Se référant à la littérature scientifique et à la nature particulièrement fragile de l'environnement de cette région, ils en arrivent à la conclusion que plusieurs techniques de combat classiques conduiraient à des dommages qui seraient juridiquement inadmissibles. Cette conclusion devrait constituer une incitation supplémentaire, pour ceux qui élaborent des politiques en lien avec l'Arctique, de démilitariser cette région et d'y favoriser la résolution pacifique des différends liés à la souveraineté, la navigation ou les ressources.

### *Summary*

While the law of the sea is rightly viewed as the most suitable international legal regime for the settlement of disputes in the Arctic, the militarization of this region in an era of climate change is also observable. Yet curiously, scant attention has been paid to the constraints the international humanitarian law (IHL) would impose on armed conflict in the Arctic, as unlikely as such conflict may be. These constraints include the specific prohibition on causing widespread, long-term, and severe environmental damage under Additional Protocol I to the Geneva Conventions as well as the related obligation to have “due regard” for the natural environment, as referred to in, for example, the *San Remo Manual on International Law Applicable to Armed Conflict at Sea*. Similarly, environmental factors must play into military assessments of targets based on the general principles of IHL related to targeting. The authors explore how these various legal obligations could be applied in the Arctic context. Referring to the scientific literature, they suggest that, due to the particularly vulnerable nature of this regional environment,

many traditional war-fighting techniques would lead to damage that is not legally permissible. This conclusion should provide an additional incentive to policy makers to demilitarize the Arctic and to solve peacefully any disputes that may arise over sovereignty, navigation, or resources.