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A Nuclear-Weapon-Free Zone and Cooperative Security in the Arctic

Summary

Changing climatic conditions in the Arctic have brought regional security concerns into renewed focus, and security relations in the north are in turn inevitably affected by confrontations in other parts of the world. Nevertheless, the region continues to develop as a "security community" in which there are reliable expectations that states will continue to settle disputes by peaceful means and in accordance with international law. In keeping with those expectations, the denuclearization of the Arctic has been an enduring aspiration of indigenous communities and of the people of Arctic states more broadly. But proposals for establishing the Arctic as a nuclear-weapon-free zone (NWFZ) face major challenges, not the least of which is the effort to accommodate states that are still in possession of nuclear weapons, the US and Russia, as members of a zone whose primary principle is to ban the possession of nuclear weapons by any state within such a zone. The way forward is thus to promote the progressive denuclearization of the Arctic, reduce nuclear risks and the role of nuclear weapons in the security policies of the US and Russia, and to preserve the existing non-militarization of the surface of the Arctic Ocean through a treaty. To that end, the mandate of the Arctic Council should be broadened to include Arctic security concerns, and re-energized disarmament diplomacy should seek to improve global strategic relations that will be conducive to further reductions in nuclear arsenals, and to encourage non-nuclear weapon states in the Arctic to formalize and entrench their collective status as a zone free of nuclear weapons.

Introduction[1]

One particularly compelling manifestation of Arctic distinctiveness is in the unusual geostrategic confluences the region embodies. The challenges of environmental fragility and a changing climate intersect with the human rights imperatives of its indigenous people; active territorial claims drive the evolutionary application of the Law of the Sea; traditional security rivals are now prodded by pragmatism and mutual self-interest to cooperate; and a concentration of nuclear weapons still hangs in Damoclean warning over the top of the world. Just as the Arctic is believed to have once formed a land bridge for the earliest human migration from Asia to the Americas, it today promises to build new and paradigm-shifting bridges across geostrategic divides and between continents. The potential for bringing nations and peoples together for peace and development is boundless, but so too is the potential for conflict.[1]

[1] A slightly shorter version of this paper is also being published simultaneously as an APLN/CNND Policy Brief, a joint publication of the Asia Pacific Leadership Network and the Centre for Nuclear Non-Proliferation and Disarmament at the Australia National University in Canberra.

So the promise of cooperation is already tempered by resurgent military activity. The years immediately following the Cold War saw a lull in military/strategic attention to the Arctic, but now the region is host to increasing nuclear submarine and bomber patrols, ballistic missile defence installations, and the build-up of conventional military capacity. Indigenous populations are taking wary note, strategic relations between the old Cold War rivals that now must share the Arctic cannot escape being jolted by far off events, and some contemplate (while others fear) a growing security role for NATO in the Arctic. Russia is certainly expanding its military infrastructure in the region, with observers divided on whether the objective is improved management and emergency response capacity, related especially to the Northern sea route, or whether Moscow once again views the Arctic primarily through the lens of geopolitical competition.

The presence of nuclear arsenals and countermeasures in the region adds a dramatic element of both danger and urgency to shaping the future Arctic, and the idea of converting the Arctic into a zone without nuclear weapons has been a feature of both Cold War and post-Cold War hopes of reinventing the Arctic as a region of cooperation rather than conflict. Furthermore, a nuclear weapon free Arctic is not just about transferring weapons out of the Arctic, but about contributing to overall reductions in global arsenals. The kind of cooperation needed is modelled in Antarctica, the world's first denuclearized continent, albeit an uninhabited one, as per the Antarctic Treaty of 1959. Antarctica remains an example of a demilitarized and denuclearized continent where competing territorial claims have been shelved, environmental concerns have priority, and both claimant and non-claimant countries conduct scientific and research work alongside one another. [2]

Indigenous peoples have proposed and endorsed an Arctic nuclear-weapon-free zone (NWFZ) in 1977, 1983 and 1998. In 2007 the Canadian National group of the Nobel Peace laureate organization Pugwash issued a paper calling for an Arctic NWFZ,[3] and in 2012 the Danish national Pugwash group held a meeting to consider the commitment in a Danish government policy paper that "in dialogue with Denmark's partners, the government will pursue the policy of making the Arctic a nuclear weapon free zone."[4]

A 2010 survey, conducted for the Walter and Duncan Gordon Foundation, of over 9000 residents of the eight Arctic states, showed substantial popular support right across the region for an Arctic NWFZ. The respondents were asked whether they agreed or disagreed with this statement: "The Arctic should be a nuclear weapons free zone just like Antarctic is, and the United States and Russia should remove their nuclear weapons from the Arctic." The results showed mixed but still significant support in the nuclear weapons states (NWS) of Russia and the US (56 and 47 per cent respectively), strong agreement in all six non-NWS in the Arctic (Canada, Denmark, Finland, Iceland, Norway, Sweden) (between 74 to 83 per cent).

In 2009 the opening recommendation of an Arctic NWFZ Conference in Denmark called for the development of modalities for establishing "a nuclear weapon free and demilitarised Arctic region."[5] Whether those objectives – a NWFZ and demilitarization more broadly – are best pursued in that order, simultaneously, or in reverse order is an important tactical question, but it is clear that the two pursuits are indelibly linked and are also key ingredients for the development of a cooperative security environment in the Arctic.

The following does not make the case for such a zone, that having been done effectively by several current writers and conferences.[6] The focus instead is on exploring current NWFZ proposals, and the challenges they face, with a view to identifying ways in which measures to demilitarize and denuclearize this key geostrategic zone can contribute effectively to the pursuit of global zero, a world without nuclear weapons.

I. The Arctic as a Security Community

The most basic characteristic of a security zone that has become a cooperative security community – that is, a genuine *community* of independent states within a defined region – is that there exists a reliable expectation that the states within that regional community will not resort to war to prosecute their disputes. Put another way, such a "pluralistic security community … [is] a transnational region comprised of sovereign states whose people maintain dependable expectations of peaceful change." [7] And, in fact, that is already a widely affirmed expectation, even if not a guarantee, for the Arctic region.[8]

But the Arctic does not reflect as clearly another crucially important characteristic of a security community – and that is "the absence of a competitive military build-up or arms race involving [its] members."[9] There is no denying that states in the region are all building up, or declaring a strong intention to build, their conventional military capacities within the region,[10] but it is still not yet definitively clear whether this "remilitarization" will turn out to be a "competitive military build-up" that undermines the growing expectation that change will be peaceful, or whether it will actually facilitate increased security cooperation. Much of current military expansion is aimed at building domestic and cross-border support to civil authorities in search and rescue, in monitoring regional activity, and in ensuring compliance with national and international regulations.

It has been the testimony of the Arctic states themselves that the threats they face in the North are non-military and not amenable to being suppressed or eliminated by military means. Governments most often still assert that the enforcement measures that those threats require are constabulary rather than military. For example, Canada's statement of requirements for its planned Arctic/Offshore Patrol Ships refers to five "security challenges to Canada at sea": illegal attempts to exploit renewable and non-renewable natural resources such as oil and gas, fish, and minerals; pollution; criminal activities such as smuggling of narcotics and illegal immigrants; unauthorized transits and/or presence by foreign ships; and piracy and terrorist threats to maritime traffic."[11] None of these is a military threat and the Department of National Defence does not have primary responsibility for responding to any of these security threats.

Analysis from the International Institute of Strategic Studies (IISS) concludes that Russia similarly is focusing much of its Arctic military presence on essentially non-military threats, notably terrorism, smuggling, illegal migration, and resource protection. The IISS sees this non-military orientation "reflected to some extent in Russia's newest naval shipbuilding programme, which has deprioritised the more ambitious and less necessary ships, such as the aircraft carrier and cruiser programme, in favour of platforms that will enable Moscow to monitor and govern its waters, such as frigates and corvettes."[12] The IISS study further concludes that the Arctic is not the scene of a competitive military build-up: "…the low levels of spending and relative lack of urgency over the modest increases in Arctic-related purchases

and presence seem to reflect a lack of genuine state-based military competition over the region."[13]

Meeting the non-military security challenges in the region requires in particular the development of a cooperative, region-wide mechanism for shared domain awareness[14] (shared information about activities in national and international areas of Arctic in order to facilitate cross border cooperation in emergency responses and compliance with relevant regulations). A region-wide constabulary capacity is sought to ensure, and to be seen to be ensuring, consistent law enforcement and regulatory compliance. Region-wide joint exercises, especially in support of the Arctic Search and Rescue Agreement and to practice implementation of marine safety and other relevant regulations, are an important element of cooperative security, not only to aid capacity building, but also to help build confidence towards the development of a more institutionalized, and therefore more reliable and durable, regional cooperative security arrangement.

All five Arctic Ocean states (Canada, Greenland/Denmark, Norway, Russia, United States) now see cooperation and the stability it can bring as being in their interests, but in the absence of any institutional or established security architecture or framework with the mandate and capacity to consolidate and entrench an overall climate of cooperation, this inclination has a fragile foundation.

II. Nuclear Weapons and the Arctic as a NWFZ

Geography is a significant factor in the retention of nuclear forces in the Russian Arctic and the build-up of missile defence in the American Arctic. While nuclear weapons in the Arctic are not evidence of a regional arms race – global numbers are after all declining – it is nevertheless hard to deny competitive elements in the deployments of nuclear weapons and related systems in the Arctic. Russia is certainly modernizing its fleet of ballistic missile submarines (SSBNs), and the United States continues to upgrade its Arctic-based ballistic missile defence (BMD) system.

There is of course a significant nuclear weapons presence in the Arctic, what we might regard as specifically Arctic nuclear weapons should include those actually based there, but also those based elsewhere but available for operations in the Arctic.[15] Only Russia has weapons in the first category, but all five officially recognized NWS (China, France, Russia, UK, US) have the capacity to bring nuclear weapons into the Arctic via submarines equipped with ballistic missiles. (None of the other three states with operational nuclear weapons – India, Israel, and Pakistan – is likely to have any foreseeable capacity to operate in the Arctic.)

Russian nuclear weapons currently based in the Arctic are deployed with six Delta IV SSBNs and based with Russia's Northern Fleet on the Kola Peninsula. Each has 16 launchers and each launcher can deliver four warheads – hence Russia's Arctic-based nuclear fleet includes 384 nuclear warheads (although all of the six Delta IVs are not always operational). Russia is in the process of building eight new Borei-class SSBNs – each will have 16 launchers (Bulava missiles), with each launcher capable of delivering 6 warheads, for a potential total of 768 warheads (though, not all of these will be permanently deployed in the Arctic). Currently three of the Borei-class SSBNs are on sea trials in preparation for deployment, one of which will be assigned to the Arctic Northern Fleet. [16] It is worth noting that patrols by Russian SSBNs have been in sharp decline, from 18 in 1995[17] to five patrols in 2012.[18] In some years there have

been none. These Russian SSBN patrols are generally confined to "strategic bastions" close to Russia and thus protected from nuclear-powered attack submarines (SSNs) by NATO nuclear weapon states. So Northern Fleet SSBN patrols "probably"[19] occur primarily in the Barents Sea and Arctic Ocean above the Kola Peninsula.[20] Nevertheless, submarine-based nuclear weapons are likely to be the most enduring of nuclear weapons systems. When disarmament progresses to the point of giving up a triad of launch systems, the sea-based launch system will not be the first to go. In fact, it is likely to be the one retained the longest, largely because it is the least vulnerable to pre-emptive attack.

The American fleet of SSBNs has been decreased from 64 in 1999 to 28 in 2011, of which only 12 are currently operational (with two more in overhaul). [21] So, "the US Navy operates 14 Ohio-class ballistic missile submarines (eight based in the Pacific and six in the Atlantic), all equipped with Trident II D5 [ballistic missiles]." Collectively, they are capable of deploying 1,152 warheads. Normally, 10 or 11 of them are capable of having warheads deployed, and eight or nine are likely to be at sea at any time. About 60 percent of patrols are in the Pacific reflecting an orientation toward China and North Korea, as well as Russia.[22] None is based in the Arctic, but any of them could be sent on Arctic patrols. American SSNs go to the Arctic for training missions from time to time and also use the Arctic for transiting between the Atlantic and Pacific Oceans.[23] In 2014 the USS *New Mexico* and the USS *Hampton* were on exercise in the Arctic. Neither American nor Russian attack submarines (SSNs) now carry nuclear weapons.[24]

Russia is also planning a new fleet of attack submarines – a much delayed program beset by cost over-runs that has yet to produce an operational ship.[25] The new SSNs will be capable, as are existing ones, of carrying nuclear-tipped anti-submarine rockets and cruise missiles, but in accordance with the US and Russian Presidential Nuclear Initiatives (PNI) of 1991, neither the US nor Russia now deploy naval tactical nuclear weapons.[26] Of Russia's roughly 2,000 non-strategic warheads, about 660 are believed to be assigned to naval weapons (cruise missiles, antisubmarine weapons, anti-air missiles, torpedoes, and depth bombs),[27] but Russia has confirmed that all non-strategic warheads are in central storage facilities.[28] Hence, the attack submarines deployed with the Northern Fleet are not armed with nuclear warheads (although that does not preclude the possibility of some warheads being in storage in Kola bases),[29] and new SSNs will be equipped with conventional armaments.

Neither the US nor Russia has any strategic bombers or land-based ICBMs (inter-continental ballistic missiles) based in the Arctic. Russian nuclear bomber patrols conduct flights over the Arctic, also down from Cold War levels but recently increasing.[30]

The US Ballistic Missile Defence program (BMD) is about to add another 14 interceptors in Alaska, bringing the total there to 40. The Alaskan expansion, at a cost of $1 billion (a distinctly modest sum in the Pentagon's world), keeps strategic BMD alive (if not well), and an ongoing thorn in US-Russian security relations. The 40 Alaskan interceptors are of concern to Russia, not for what they represent now (40 interceptors of dubious reliability are not a threat to a strategic deterrent of 1,500-plus warheads), but for what an expanded BMD force could become and for what they signal about American strategic intentions.

When disarmament progresses to the point of giving up a triad of launch systems, the sea-based launch system will probably not be the first to go. In fact, it is likely to be the one

retained the longest, largely because it is the least vulnerable to pre-emptive attack. In addition, both the US and Russia have the capacity to fly into and over the region with airborne weapons. Most land-based strategic missiles, or their released nuclear warheads – all of which are based outside the Arctic region in Russia, the US, China, and France – would, or could, depending on their destination, travel through space above the Arctic once launched.

II.1. Basic Elements of NWFZs

NWFZs are a means of reducing the geographical sway of nuclear weapons and are thus an important and respected mechanism for advancing the goal of disarmament and reducing the role of nuclear weapons in state security policies. It is a strategy promoted in NPT Article VII and states have in fact pursued that strategy to a remarkable degree. There are now nine such zones or jurisdictions: Latin America and Caribbean (Tlatelolco Treaty); South Pacific (Rarotonga Treaty); South East Asia (Bangkok Treaty); Africa (Pelindaba Treaty); Central Asia (Semipalatinsk Treaty); Mongolia; Antarctica; Sea-Bed; and Outer Space).[31] Thus states comprising 99% of the southern hemisphere land area and almost 60% of global land mass have agreed to ban nuclear weapons from their territories. Some 114 states,[32] about 60 per cent, are now included in such jurisdictions and they are home to 1.9 billion people.

The basic conditions that attend NWFZs are well-known. Article VII of the NPT provides for "the right of any group of states to conclude regional treaties in order to assure the total absence of nuclear weapons in their respective territories"[33] – so that is the basic condition, no nuclear weapons on the territories of states in the zone.

To attain formal status, a NWFZ requires recognition of such by the UN General Assembly, and within such zones the prohibition on possession is generally reinforced by prohibitions on deployment and use, and is supported by a means to verify compliance. A more comprehensive list of prohibitions that emerges out of Arctic NWFZ proposals includes research, development, testing, acquisition, manufacture, possession, deployment, stockpiling, use, and/or control of nuclear weapons. All non-NWS, whether in a NWFZ or not, are essentially already bound by these same prohibitions by virtue of being signatories to the Nuclear Non-Proliferation Treaty (NPT). While the NPT does not include this long list of prohibitions, its provisions are broad and have been taken in practice to include the full range. The NPT has, however, in practice made one critical exception. While the Treaty does not specifically refer to the stationing of nuclear weapons on territories of non-NWS, Article II is generally understood to prohibit it, but in practice it has actually been tolerated – notably, five non-NWS members of NATO host US tactical nuclear weapons on their soil and all five remain parties in apparent good standing to the NPT. Article II prohibits non-NWS from manufacturing "or otherwise acquiring" nuclear weapons or other nuclear explosive devices, and research and development are understood to be part of the process of diversion, or "otherwise acquiring" nuclear weapons, that is prohibited. All states, within or outside a NWFZ, are prohibited from assisting any state within an NWFZ in any activity that would violate the above prohibitions. Article III mandates safeguards whose purpose is to prevent diversions of nuclear energy from peaceful uses to nuclear weapons.

States within NWFZs are entitled to receive assurances from NWS that they will not be attacked, targeted, or threatened by nuclear weapons. Protocols to the Treaties are typically signed by the five NWS in the NPT respecting the NWFZs and providing the countries in a zone

with negative security assurances. Additional provisions include a prohibition on conventional attacks against nuclear facilities and on testing, the latter to be accomplished by having all states within the zone ratify the Comprehensive Test Ban Treaty.[34]

II.2. Challenges of an Arctic NWFZ Treaty

The feasibility of actually achieving an Arctic NWFZ, and the relative priority that should be given to the pursuit of one, is widely debated. The idea has obvious merit inasmuch as it contributes to the pursuit of global zero – a world without nuclear weapons. But legitimate questions arise regarding the extent to which a focus on the Arctic, a region that hosts a significant part of the arsenal of just one of the major NWS, advances or detracts from the progressive pursuit of a world without nuclear weapons. Before returning to such questions, however, it is important to review the challenges that confront the effort to establish the Arctic as a NWFZ.

2a. Geography

The proposal to establish a NWFZ throughout the Arctic is the first instance of a proposal for a NWFZ that would include only parts of the national territories of its members. Various options have been considered. Some propose a zone confined to all land, sea and air territory, national and international, above the Arctic Circle. Others propose that the zone include the entire national territories of all of the Arctic non-NWS, but only the Arctic territories of the NWS – Alaska for the United States, and the northern or Arctic part of Russia. Another option would be to have the Arctic NWFZ boundaries follow those adopted by the Arctic Council for the Arctic Search and Rescue Agreement.[35] As the Map in Appendix 1 indicates, in Canada the proposed southern boundary is 60^0. In the US, all of Alaska is included, with the southern boundary at just above 50^0. For Russia, Finland, Sweden, and Norway, the southern boundary is the Arctic Circle. All of Iceland and Greenland are included, with southern Ocean boundaries at just below and just above 60^0.

For Russia, each of the proposals would have the major nuclear weapons facilities of the Kola Peninsula, being north of the Arctic Circle, fall within the boundaries of the proposed NWFZ. On the realistic assumption that Russia will not soon divest itself of those facilities, that means in turn that special exemptions have to be explored. One proposal would be that Russia could retain its nuclear bases in the Arctic, and that the zone's conditions would thus be written to allow Russian nuclear weapons submarines to transit to and from those bases, but with a commitment from the Russians not to conduct patrols in the Arctic waters. The SSBNs would thus only transit the Arctic and would not be operational, or be deployed, there.[36] Such exemptions, or exceptions, would of course have the effect of turning in this instance, the nuclear-weapon-free zone into a discriminatory agreement – that is, some member states in the zone would be permitted to possess nuclear weapons while others would not.

The geography of the proposed zone, which is to include the international Arctic Ocean, also raises the separate legal question of whether Arctic states on their own have the legal jurisdiction to decide that nuclear weapons should be prohibited from the Arctic Ocean. They clearly do not, but that objective could still be achieved without necessarily requiring a global treaty. Non-NWS are obviously already committed not to deploy nuclear weapons within the zone, including the Arctic Ocean. NWS in the zone would also make the commitment, as part of the NWFZ agreement, not to deploy any of their nuclear weapons anywhere within the

zone, including the Arctic Ocean. Other states with nuclear weapons could be requested to sign a protocol to the NWFZ agreement making the same commitment not to deploy nuclear weapons anywhere within the zone.

2b. Basic provisions of an Arctic NWFZ

For non-NWS in the Arctic, the essential provisions associated with NWFZs are already in place. The six Arctic non-NWS are already prohibited by the NPT from researching, developing, testing, acquiring, manufacturing, possessing, stockpiling, deploying, using, and/or controlling nuclear weapons, in the Arctic or anywhere else. Even though, as noted earlier, some European non-NWS members of NATO controversially host nuclear weapons on their territories, and Canada did at one time host US nuclear weapons, there are no nuclear weapons now stationed on the territories of non-NWS states of the Arctic. An Arctic NWFZ would certainly make that permanent, and would also prohibit the operational presence of NWS weapons systems within the international sea and air spaces and the national sea and air spaces of either NWS or non-NWS in the Arctic (albeit with perhaps the special arrangements for Russia of the kind referred to above).

Insistence upon the non-possession of any nuclear weapons by any state within the zone would not at this point be possible. In other words, if the Arctic NWFZ proposal is understood as an incremental step toward, rather than a product of, a world without nuclear weapons, allowing NWS to be members of a NWFZ would make an Arctic NWFZ a major departure from the hitherto required standard. The Arctic NWFZ proposal is a first in proposing that states with nuclear weapons become members of a zone that bans all nuclear weapons. Hence, if the US and Russia were to be part of such an Arctic zone there would have to be more special provisions. In the first instance, both states would have to be exempted from the basic prohibition that a NWFZ member state must not possess nuclear weapons – that is, the NWS members of the zone would not have to, as the NPT nevertheless requires, "assure the total absence of nuclear weapons in their respective territories." The US could comply with the requirement that nuclear weapons not be, stationed, deployed or used within the zone, but Russia would have to be exempt from the stationing prohibition. As already noted, the prohibition on deployment could be accommodated by Russia by committing to surface transit, flags flying, of its SSBNs through the zone to and from the bases on the Kola Peninsula.

The implications of permitting, or even proposing, exemptions of that magnitude should obviously be very carefully considered. Adding another discriminatory instrument to the panoply of nuclear weapons rules and regulations would not necessarily strengthen the drive towards a world without nuclear weapons. A different set of rules for NWS in an Arctic NWFZ would likely find support if those exceptions were governed by a strict deadline for all states to comply with the strict non-possession standard of NWFZs, but neither the US nor Russia would rush to sign on to such a deadline separate from an overall global disarmament schedule.

Jan Prawitz of the Swedish Institute of International Affairs nevertheless points out that there is a precedent within the proposed zone of special demilitarization provisions applying to only part of a state. Norway's Spitsbergen is demilitarized, even though the rest of Norway is not.[37] Similarly, parts of the US and Russia could be denuclearized, even though the rest of those countries are not.

It is also important to be aware of another potential unintended consequence of removing nuclear weapons from the Arctic. If Russia were to remove all SSBNs from the Arctic in support of an Arctic NWFZ before completely eliminating or radically reducing that class of weapons, those SSBNs would have to be redeployed in the Pacific, a development neither Japan, China nor the US would welcome. Tom Axworthy emphasizes the point: "the goal," he says, "is not to create a 'zone of peace' free from nuclear weapons in the Arctic and then have a build-up of nuclear weapons right on its border. That would defeat what the zone is trying to achieve." He refers to what Prawitz calls the need for "thinning out" of nuclear weapons in the territories just outside the zone.[38] But more than that would be required. Any reduction or removal of nuclear weapons from the Arctic should be a move to reduce weapons totals globally, not just a decision to redeploy them elsewhere, possibly in more vulnerable and/or provocative locations than the Arctic.

An Arctic NWFZ would also be expected to follow the example of the Rarotonga Treaty which includes a prohibition on radioactive waste dumping anywhere within the zone.[39] And for such a prohibition in the Arctic to have meaning, it would have to include a commitment to clean up any wastes already in the region.

2c. Negative Security Assurances and the NATO nuclear umbrella

The negative security assurance (NSA) provisions of a NWFZ obviously present a special challenge when that zone includes as members NWS, and non-NWS that are allied to a NWS under formally adopted common nuclear weapons policies. In the case of the Arctic it is rather unlikely, to put it mildly, that the US and Russia would give NSAs, the undertaking that they would not use or threaten to use nuclear weapons against any state within a particular NWFZ, to each other as part of an Arctic NWFZ. Nor is it likely that Russia would give such assurances to the NATO non-NWS of the Arctic while those states remained part of a nuclear alliance – especially an alliance that Russia still regards as a threat to its strategic interests.

An Arctic NWFZ notwithstanding, the US and Russia would continue to be NWS, but a minimum implication of joining such a zone would be an undertaking to exclude the geographic Arctic from their target lists – in which case they would undertake not to threaten or use nuclear weapons against any target within the defined Arctic zone, including any parts of the national territories of the NWS within the zone. Other NWS (UK, France, and China) would be called upon to offer similar assurances to all states of the zone, including Russia and the US with respect to their territories within the geographic definition of the zone. Such an arrangement would obviously bend the traditional meaning of NSAs, but a NWFZ that includes NWS is itself a major departure from the traditional NWFZ.

There is a precedent for states under an alliance nuclear umbrella to be accepted into NWFZs – notably, Australia within the Rarotonga Treaty zone and the states of the Central Asia Zone. Australia is in alliance with a NWS under ANZUS, and Central Asian states are similarly allied to a NWS under the Russian-led Collective Security Treaty Organization (CSTO, also known as the Tashkent Treaty) which establishes collective security arrangements between Russia and four of the states in the Central Asian zone. Despite the latter, in May 2014 the US, UK and France signed the zone's NSA protocol. Such arrangements would of course be more readily arrived at if the zone did not include the entire territories of the non-NWS. In other words, Russia might

logically offer NSAs related to non-NWS territories within a restricted Arctic zone, but would be unlikely to give blanket NSAs to entire states that are members of NATO.

A clear declaration by NWS, the US and Russia in particular, that the sole purpose of nuclear weapons is to deter the use of the others' nuclear weapons would help to reinforce, and add credibility to, their exclusion of the Arctic from nuclear targeting and threats.

2d. Freedom of the Seas in an Arctic NWFZ

NWFZs are clearly defined by geography, but international waters adjacent to but not under the legal jurisdiction of NWFZ member states are not automatically covered, and ocean waters within the 12-mile sovereignty zones, or territorial seas, of NWFZ member states are subject to "innocent passage" – meaning the right of vessels of other states to transit through waters in these zones directly and openly, provided there is no prejudice to the security of the state whose waters are being transited. Submarines on innocent passage must be on the surface with flag showing.

An Arctic NWFZ based on land territories within the Arctic Circle would not include the Arctic Ocean beyond territorial waters, which is most of the Arctic, so a meaningful Arctic NWFZ will require all NWS to agree not to deploy, or to have any kind of nuclear weapons "presence" in the high seas of the Arctic Ocean. In other words, for an Arctic NWFZ to effectively denuclearize the Arctic it will have to apply to the Arctic Ocean, and that in turn will require NWS to mutually agree to restrictions on deployments, patrols, and possibly transit in or through all Arctic waters.

The Arctic Ocean outside of territorial waters, and certainly beyond EEZs, is in fact a global commons. That means, as already noted, it is not controlled by its coastal states, nor do those states regulate activity within it or on its surface. Legally, denuclearizing the Arctic Ocean would require the agreement of all states throughout the world, but the more likely route to denuclearization would be for all states with nuclear weapons to enter into a mutual agreement not to operate or station nuclear weapons within Arctic waters.

While the status of the Arctic Ocean in a NWFZ presents challenges, scholars have addressed the "freedom of the seas" question. Ramesh Thakur in his volume on nuclear weapon free zones notes that while NWFZs "should have clearly defined and recognized boundaries," various options exist. "The perimeter enclosing a zone can be a patchwork covering only the territories of member countries, or it can be a 'picture frame' incorporating all enclosed space within the zone. In the latter event, in the case of maritime zones the 'zone of application' of the treaty clauses becomes separate from the 'zone' as such, since they cannot extend to the high seas." While all states have the right under UNCLOS to enter and use international waterways, Thakur points out that "a group of states can agree among themselves to impose restrictions on their own activities, but not on that of others. (Although they can invite other states to sign relevant protocols containing similar restrictions.)"[40]

Hamel-Green notes that:

> … while nuclear weapon states may seek to insist on their full rights under [UNC]LOS, there is nothing to prevent their agreeing, through binding protocols, to respect specific maritime zones as denuclearized areas and waive their normal rights under the LOS. The nuclear weapon states frequently unilaterally declare 'exclusion zones' in open waters for the purpose of missile testing, and continue to observe the ban on nuclear weapons in the open waters of the Antarctic Treaty. The possibility of denuclearization is enhanced by the reciprocal undertakings of the US and Russia not to deploy tactical nuclear weapons on ships.[41]

Prawitz points out that:

> … among existing Nuclear Weapon Free Zones, the Antarctic Treaty and the Rarotonga Treaty (South Pacific) include specific provisions that treaty obligations will not infringe upon freedom of the seas within the zone perimeter. The Tlatelolco Treaty defines the zonal area as including substantial parts of the Atlantic and Pacific oceans, but nuclear weapon states parties to the security assurances guarantee protocol have made statements of interpretation to the effect that they will not be restricted as regards freedom of the seas in those areas.[42]

The Canadian Pugwash proposal as elaborated by Adele Buckley counsels flexibility: "At least in early stages of an NWFZ, it is possible the United Nations' *right of innocent passage* could apply to Russia and/or American submarines that may transit the Arctic, but commit not to patrol there."[43]

2e. Verification and Confidence Building

The international community already has an impressive array of verification mechanisms in place to confirm that non-NWS are not violating their obligations and are not trying to acquire nuclear weapons. But there remain questions regarding the extent to which zone-specific verification mechanisms need to be constructed. Do individual states declaring their own territories to be nuclear-weapon-free need to mount their own national verification capacity to detect submerged submarines within their waters? And if the Arctic Ocean were to be declared nuclear-weapon-free, by virtue of the NWS commitments not to deploy there, would the states of the zone require a collective capacity to detect any submerged submarines anywhere in that ocean?

Verification is obviously essential to building basic confidence that a NWFZ is in fact what it claims to be, but the focus of verification should clearly be on those areas not covered by other verification and monitoring arrangements. Notably, International Atomic Energy Agency (IAEA) safeguards are already in place to confirm non-NWS compliance with their NPT obligations. Since all states that would be in an Arctic NWFZ are members of the NPT, the basic verification mechanisms for detecting diversion from peaceful uses are already in place. Other collective verification efforts, such as confirming the non-presence within or transit through the zone, would have to be undertaken cooperatively through a dedicated regional agency. Thakur points to strong precedents for zone-based mechanisms to monitor compliance. A minimum requirement is comprehensive safeguards under the IAEA, but existing NWFZs have augmented this with dedicated organizations or secretariats which include responsibilities for

verifying compliance. The Tlatelolco secretariat has the authority to call special meetings in the event of emerging concerns but has delegated to the IAEA its powers to conduct special inspections of suspicious activities. The Pelindaba Treaty establishes a 12-member commission to oversee compliance which can request IAEA inspections that include representatives from the commission. The Bangkok NWFZ empowers the zone's executive committee to convene a special meeting of members in the event of a breach of its protocols by a NWS. The treaties also variously include provisions for referring issues to regional bodies, to the UN General Assembly, the UN Security Council or the International Court of Justice.[44]

2f. Legal Framework for an Arctic NWFZ

Prawitz has set out a clear legal framework for an Arctic NWFZ – an umbrella treaty to which several protocols would be added. The umbrella agreement would "specify the objectives and general purposes of the zone regime, its geographical scope and core parties," as well as basic verification provisions and "complaints procedures, entry into force requirements, duration and withdrawal."[45]

A variation on the Prawitz formula would include a protocol signed by the six non-NWS members of the zone which would specify their obligations under the treaty. A second protocol signed by the two NWS members "would specify their obligations as agreed between them and endorsed by the six core" non-NWS. The assumption here seems quite properly to be that, given the unusual circumstances of having NWS within a NWFZ, it would be necessary for the two states to come to bilateral agreement on arrangements on how to manage their Arctic operations and facilities in the context of their overall strategic postures. Provisions for Russian nuclear forces on the Kola Peninsula, for BMD installations in Alaska and Greenland, and for anti-submarine deployments and operations would, as discussed above, be among the issues to be resolved.

A separate protocol would be signed by all five NWSs, and perhaps by the three other states with confirmed nuclear arsenals but not bound by the NPT (India, Israel, Pakistan), to provide negative security assurances – a commitment not to use or threaten to use nuclear weapons against any targets within the zone – as well as a commitment not to launch such weapons from anywhere in the zone.[46] All states with nuclear weapons would include in the protocol a commitment not to deploy or operate nuclear weapons systems anywhere within the zone, including, of course, the international spaces within the zone.

III. The Policy Response

Whether the progressive denuclearization of the Arctic is more likely to be a product of, or a primary means towards, a world without nuclear weapons, will continue to be debated, but in the meantime the Arctic still affords important initiatives that can help shape an international climate of security cooperation that will be more conducive to the pursuit of global zero, and that can serve to reduce the role of nuclear weapons in the security policies and planning of Arctic nuclear-armed states.

III.1. SSN Exclusion Zone

The Bulletin of Atomic Scientists notes that Russia is moving to concentrate its warheads on fewer missiles – in other words, more MIRVS (multiple, independently targeted, re-entry vehicles).[47] It is a destabilizing configuration in as much as it makes strategic missiles higher value first strike targets. To avoid that particular vulnerability and to explicitly forego such targeting, the US and Russia both need to avoid SSN operations in agreed upon zones in which each other's nuclear weapons subs patrol.

Russia's SSNs are not really in a position to routinely track and target American ballistic missile carrying submarines in the open Pacific and Atlantic oceans, largely because the Americans have more SSBNs and operate them on wider patrols, and thus are less vulnerable. But threatening launchers is by definition destabilizing and American SSBN patrols should have formally agreed upon areas into which Russian SSNs do not penetrate. Because the Russian SSBNs are largely confined to its strategic bastions and are thus more vulnerable to aggressive anti-submarine activity, the US should also be formally committing to keeping its attack submarines out of Russia's primary areas of operation. In fact that is one of three primary measures that the arms control community has repeatedly proposed for lessening sea-based risks in general and in the Arctic in particular: that the US and Russia both reduce the launch readiness of their submarine-based ballistic missiles, that they both refrain from deploying their SSBNs close to each other's territories, and that they agree not to track and thus threaten each other's SSBNs with attack submarines in agreed exclusion areas for attack submarines.

One feature of the 1987 Murmansk Initiative of Soviet President Mikhail Gorbachev was a proposal to preclude Western anti-submarine warfare operations against the Soviets in the home waters of the Soviet Northern and Baltic fleets.[48] And a recent report by Anatoli Diakov and Frank Von Hippel proposes again that Russia agree to confine its northern SSBN fleet to the Arctic and that the US agree to keep its attack submarines out of the Russian side of the Arctic.[49] Expanding that proposal to exclude all attack submarines from all areas of the Arctic would have to address the reality that some Russian attack submarines are based in the Kola Peninsula area – again, innocent passage provisions are the most obvious arrangement. In any event, restrictions on anti-submarine warfare operations in the region commend themselves as major stabilizing and risk reduction measures. Promoting the Arctic as an area from which attack submarines are excluded is not a disarmament measure and it does not accomplish denuclearization of the Arctic. It is, however, a realistic risk reduction proposal and, if implemented, would be an important confidence building development which would in turn be supportive of nuclear disarmament broadly, including and especially in the Arctic.

III.2. Demilitarization of Arctic Ice and Surface Waters

The 2009 Danish conference, referred to earlier, proposed a NWFZ and demilitarization for the Arctic, and while it may not have intended that sequence, there is logic in reversing that order. For all of known human history, climate and geography have combined to ensure the non-militarization of the Arctic Ocean. It is now becoming clear that climate and geography will not be able to continue that salutary service much longer, which makes this the time for the international community to agree to do politically what climate and geography have done for us until now. This proposal to demilitarize the ice and sea surface of the international Arctic Ocean originates with Canadian scholar Franklyn Griffiths.[50] The idea has the great advantage

of preserving what already exists, without having to break difficult new political ground. Just as the Seabed Treaty preserved the status quo in preserving the seabed from nuclear weapons, and just as NWFZs to date have largely preserved the status quo by keeping nuclear weapons out of areas where they were already not present,[51] demilitarizing the surface of the Arctic Ocean preserves what is already a fortuitous reality.

In 1920 the Svalbard Treaty demilitarized that archipelago and all Arctic states have ratified the treaty.[52] The European Parliament has called for a protected area around the North Pole,[53] evidence of further political support for preserving the demilitarized state of the Arctic Ocean ice and surface waters.

With the surface and seabed both demilitarized, the remaining task would be to prohibit submarines carrying nuclear weapons from the sub-surface Arctic Ocean. That awaits further progress in global reductions, but demilitarization of the surface waters is already a reality – a reality produced by nature and geography that should now be entrenched by law.

III.3. Verification

The kinds of verification measures the Arctic most immediately needs are clear assurances of regional cooperation and compliance with regulations and standards designed to further the well-being and quality of life of the Arctic's people. Implementation of the Search and Rescue Agreement should be high on the list, along with conformity with shipping and fishing regulations and resource extraction standards. The capacity to verify that kind of compliance not only promises the development of practical capabilities to enhance local well-being, but also the development of a political climate of expectation of security cooperation more broadly.

Improved transparency and domain awareness throughout the Arctic are required to more effectively meet immediate shared security and law enforcement expectations and emergency response capacity, and such domain awareness would also contribute to strategic awareness and ultimately to monitoring and verification of a NWFZ. International cooperation and information exchange in support of shared domain awareness will also help to build the kind of cooperative security environment essential for progress in denuclearization. Thakur calls for a two-tier system, with the region or zone empowered to mount on-site challenge and spot inspections along with the requirement that all states in the zone submit to IAEA comprehensive safeguards pertaining to all fissionable materials and nuclear activities within their jurisdictions.[54]

III.4. Working towards an Arctic NWFZ

In the context of emphasizing measures with more immediate security impact and benefit – namely, prohibiting attack submarines in the Arctic, preserving the demilitarization that already characterizes the ice and surface waters of the international Arctic Ocean, and promoting shared domain awareness in the region – it is appropriate to continue to debate, define and declaim the goal of a nuclear weapons free Arctic. And that debate should include considerations of the implications of constructing a NWFZ that would allow exceptions to principles and conditions at the core of the NWFZ idea. As already noted, some Arctic NWFZ proposals envision NWS member states of the zone continuing to possess nuclear weapons, and even continuing to station them in the Arctic on condition that they are not operationally

deployed there, as well as provisions to include only parts of some members' territories in the zone. Rather than proposing an Arctic NWFZ that would violate the most basic principle of such zones (the non-possession of nuclear weapons by states in the zone), it might be better to propose and pursue the progressive denuclearization of the Arctic without invoking a hybrid NWFZ status – in other words, preserve the NWFZ status for when the region can meet *all* the essential conditions of a NWFZ as defined to date.

4a. An initial focus on non-NWS

It makes sense, therefore, to focus early Arctic denuclearization challenges on the non-NWS. Formal declarations of nuclear-weapon-free commitments in those states would follow the prevailing NWFZ model, namely, politically and legally reinforcing the denuclearized status quo of non-NWS signatories of the NPT. Explorations towards a Canada/Nordic NWFZ[55] would present opportunities to sort out negative security assurance arrangements in a zone that includes NATO members. A Nordic NWFZ has been discussed for some time with learnings on which to draw, notably from the 1984–85 study by a bipartisan commission and the 1987–91 exploration by a Nordic Senior Officials Group.[56]

4b. Efforts to promote US/Russian strategic cooperation

Pessimism about early progress in further reductions in US and Russian nuclear arsenals has grown in response to events in Ukraine and a seeming litany of irritations that continue to bedevil the one relationship that more than any other will drive the future of nuclear disarmament efforts. That relationship obviously has to change. The group of four US heavyweight advocates for progress towards a world without nuclear weapons have wisely observed that "a world without nuclear weapons will not simply be today's world minus nuclear weapons."[57] Just as certainly, the Arctic without nuclear weapons will not simply be today's Arctic with the nuclear weapons removed. For those nuclear weapons to be removed, the Arctic will have to change in profound ways – in ways that further advance the emergence of a genuine "pluralistic security community." The Crimean and ongoing Ukrainian crises demonstrate how fragile the predisposition to cooperate on security matters really is. All states and civil society have a stake in promoting cooperation, especially between the major nuclear powers, as an enduring strategic habit, not only in the Arctic. One way to allow that to happen more freely and productively in the Arctic would be to mandate the Arctic Council to include mutual security matters on its agenda.

4c. Civil society engagement

With popular support for an Arctic NWFZ running high in most Arctic states, even in the face of major practical challenges, civil society has already made an important contribution in presenting credible proposals for advancing towards a nuclear free Arctic. Indigenous peoples of the region have been an essential part of that process. The 1977 Inuit Circumpolar Council resolution on "peaceful and safe uses of the Arctic Circumpolar Zone" called for demilitarization, a commitment to "peaceful and environmentally safe purposes" for the Arctic, a prohibition on military bases and fortifications, a ban on testing, a ban on the disposition of chemical, biological or nuclear wastes in the Arctic, and "a moratorium … on emplacement of nuclear weapons." In 1983 an Inuit Circumpolar Council resolution on "a Nuclear Free Zone in the Arctic" repeated the call for the Arctic to be used only for "peaceful and environmentally safe" purposes and called for a prohibition on "testing of nuclear devices

in the Arctic or sub-Arctic," as well as a ban on nuclear dump-sites. In 1998 a resolution on the "clean-up of military sites" called on the governments of the United States, Russia, Canada and Denmark to clean up military sites and called "upon the governments of the Arctic countries and the world to designate the Arctic a military-free zone to make sure that reckless and harmful activities are never repeated in the Inuit homeland."[58]

Continued leadership from communities in the North will be essential for advancing the agenda of a peaceful, environmentally sustainable and nuclear free arctic. Byers makes the useful point that sub-state entities like Nunavut or Greenland also have a role to play and could simply declare themselves to be nuclear-weapon-free, the way some cities have,[59] in anticipation of a future time when an Arctic NWFZ becomes a serious item on the international security agenda.

Conclusion

The genuinely urgent and immediately relevant security questions for the Arctic are not about strategic competition or military preparedness. Instead, they have to do with the sustainable well-being of the people of that region in a time of profound change and escalating economic and environmental, and therefore political and security, interest. Of course, one essential ingredient of such human security is regional stability. Peace and stability within and between the states of the region are part of the foundation of local well-being, and in the Arctic especially, that in turn requires the development of timely and effective responsiveness to emergencies as well as the capacity to ensure compliance with environmental, fishing and other common standards, regulations and local laws.

Nuclear weapons in the Arctic obviously make no contribution to the pursuit of those imperatives. They do, however, divert resources and political attention from the challenges at hand, and in that sense they undermine local as well as global well-being. Above all, they are part of the entrenchment of global arsenals and therefore they help to perpetuate the irrational stranglehold that those arsenals still have on global strategic relations – making us all stakeholders in a denuclearized world, including the Arctic.

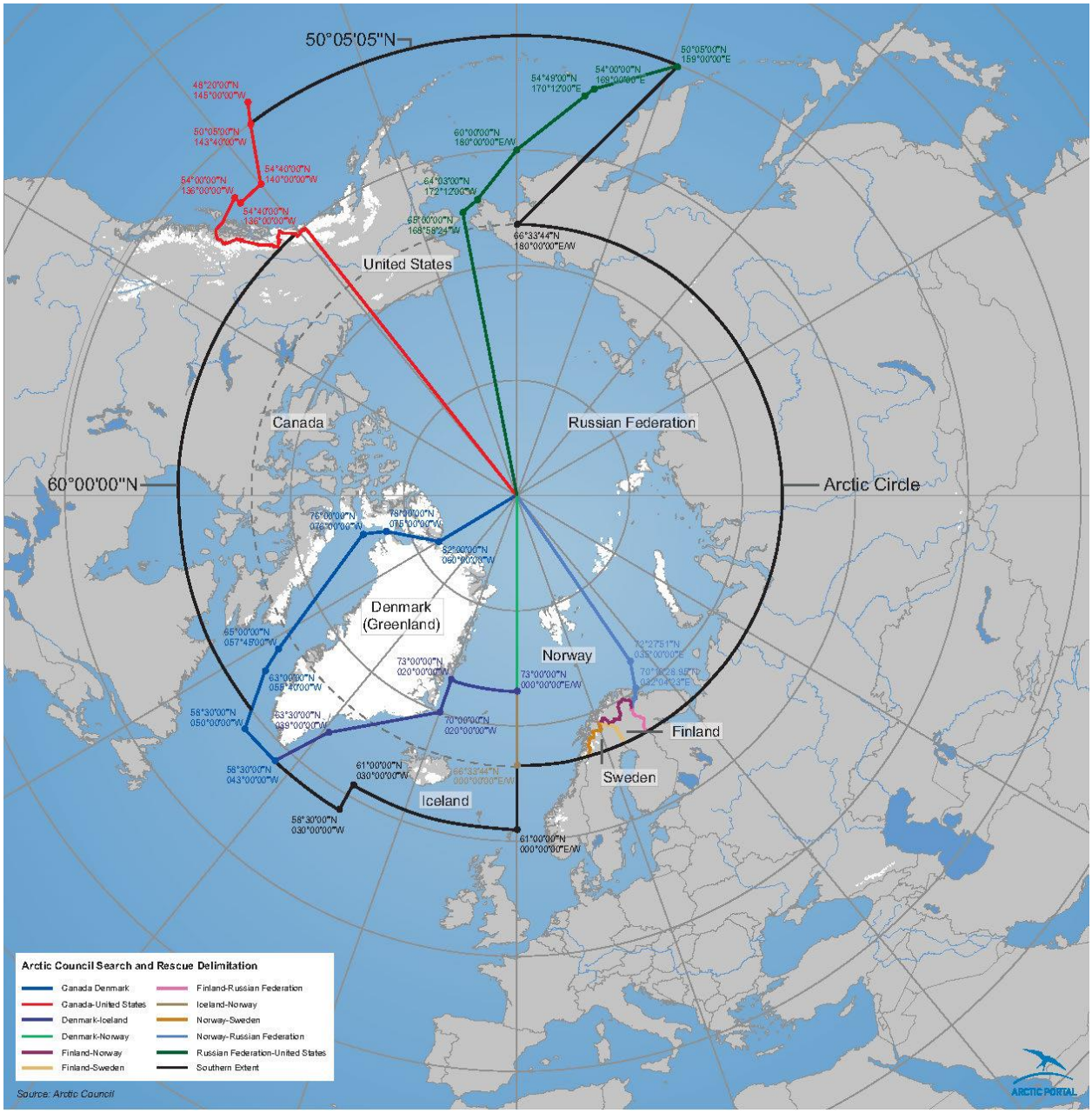
However logical and compelling it may be, the route to an Arctic nuclear-weapon-free zone will not be easy or quick. And the achievement of that goal is unlikely to be accomplished separately from major progress in the larger global pursuit of nuclear disarmament. The prospects are that Russia's Arctic nuclear arsenal will continue to parallel nuclear weapons trends globally. As overall numbers decline, so will the number of warheads in the Arctic – another reason to welcome and insist on the pursuit of further reductions in US and Russian nuclear arsenals. Analysts see discussions focussing on a further cut by one-third, down to a total of about 1,000 deployed warheads on each side in the next iteration of strategic arsenal reductions.[60] Assuming proportional cuts to the strategic warheads in Russia's Northern Fleet, that would reduce the number of nuclear warheads in the Arctic down to about 200 – hardly an Arctic NWFZ, but one more modest step in the right direction and thus worth encouraging.

But even that modest step will prove challenging. Some of those challenges, like ballistic missile defence and NATO's superiority in conventional forces and persistent press eastward, lead the Russian scholar Rybachenkov to conclude that "prospects for launching in the near future the next round of bilateral talks on future nuclear cuts are dim." He therefore concludes that the chances for movement towards an Arctic NWFZ "remain substantially reduced." He

notes that ultimately Russian consideration of an Arctic NWFZ will be inextricably linked to the global dynamics of nuclear disarmament.[61] Given developments in Crimea and eastern Ukraine, the opportunities for constructive action appear to have become even more remote for the present.

So the Arctic denuclearization agenda is clear: reduce nuclear risks and the role of nuclear weapons in the security policies of the US and Russia by agreeing to make the Arctic an attack submarine exclusion zone; preserve the existing non-militarization of the surface of the Arctic Ocean through a formal treaty; broaden the mandate of the Arctic Council to include Arctic security concerns; devote priority diplomatic energy to fostering global strategic relations that will be conducive to further reductions in nuclear arsenals, including in the Arctic; and encourage non-NWS in the Arctic to formalize and entrench their collective status as a zone free of nuclear weapons.

Appendix 1: Arctic Search and Rescue Delimitation Map, Arctic Portal Library



Source: http://library.arcticportal.org/1500/

Endnotes

[1] As argued by Jayantha Dhanapala, former UN Under-Secretary-General for Disarmament Affairs, in: "The Arctic as a bridge," *Bulletin of the Atomic Scientists*, 02/04/2013. www.thebulletin.org/arctic-bridge.

[2] Ramesh Thakur, "Stepping Stones to a Nuclear-Weapon-Free World," in R. Thakur, ed., *Nuclear Weapons-Free Zones* (London/New York: Macmillan and St. Martin's Press, 1998, p. 19.

[3] Canadian Pugwash Call for an Arctic Nuclear Weapon-Free Zone, 24 August 2007, http://www.pugwash.org/reports/nw/canadian-pugwash.htm.

[4] John Avery, Proposals for an arctic nuclear weapon free zone, 28 March 2012, INES, http://www.inesglobal.com/whats-new-in-ines-10april-2012.phtml.

[5] Cindy Vestergaard (ed), *Conference on an Arctic Nuclear Weapon Free Zone*, DIIS Report 2010:03, Danish Institute for International Studies, Copenhagen, 10-11 August 2009 Conference.

[6] Thomas S. Axworthy, "A Proposal for an Arctic Nuclear-Weapon-Free Zone," 4/4/2012, mimeo.; J. Adele Buckley, "An Arctic Nuclear-Weapon-Free Zone: Circumpolar Non-Nuclear Weapons States Must Originate Negotiations," *Michigan State International Law Review* 22:1 (2013); Jan Prawitz, "The Arctic: top of the world to be nuclear-weapon-free," *Disarmament Forum*, 2/2011, UNIDIR. www.unidir.org; Cindy Vestergaard, ed., *Conference on an Arctic Nuclear Weapon Free Zone* (Copenhagen: DIIS Report 2010:03, Danish Institute for International Studies, 10-11 August 2009 Conference).

[7] These definitions are taken from Amitav Acharya, *Constructing a Security Community in South East Asia: ASEAN and the problem of regional order*, 2nd ed. (London: Routledge, 2009), pp. 18–21. Acharya's definition is, of course, an elaboration of Karl Deutch's foundational discussion of "security communities."

[8] The Illulisat declaration of 2008 is a commitment by Arctic states to settle disputes by peaceful means in accordance with international law in general and the Law of the Sea in particular. [The Ilulissat Declaration, Arctic Ocean Conference Ilulissat, Greenland, 27–29 May 2008. http://www.oceanlaw.org/downloads/arctic/Ilulissat_Declaration.pdf]

[9] Acharya, *Constructing a Security Community in South East Asia*, pp. 18–21

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[10] "Circumpolar Military Facilities of the Arctic Five" prepared by Ernie Regehr and Anni-Claudine Buelles, The Simons Foundation. Updated: 20 June 2014.

[11] Department of National Defence Statement of Requirements (SOR, P. 6/52) – no longer available on DND website.

[12] Christian Le Miere and Jeffrey Mazo, "Arctic Opening: Insecurity and Opportunity," IISS Adelphi Paper, Vol 2013, Number 440. 13 January 2014.

[13] Christian Le Miere and Jeffrey Mazo, "Arctic Opening: Insecurity and Opportunity."

[14] Ernie Regehr, "Arctic Maritime Domain Awareness: A domestic and strategic imperative," *Disarming Arctic Security*, 03 February 2014, The Simons Foundation. http://www.thesimonsfoundation.ca/sites/all/files/Arctic%20Maritime%20Domain%20Awareness-A%20domestic%20and%20strategic%20imperative-DAS%2C%20February%203%202014_0.pdf

[15] Hans M. Kristensen and Robert S. Norris, "US nuclear forces, 2014," Nuclear Notebook, *Bulletin of the Atomic Scientists* 70:1 (2014), pp. 85–93.

[16] Hans M. Kristenses, "Russian SSBN Fleet: Modernizing But Not Sailing Much," FAS Strategic Security Blog, 3 May 2013. http://blogs.fas.org

-Yuri Dolgoruk completed and in Arctic for trials and will stay with Northern Fleet
-Alexander Nevsky in Arctic for trials and will go to Pacific Fleet
-Vladimir Monomakh in sea trials with ship builder, destined for Pacific
-the next five will be of an imporved design and will be known as Borei-II
-overall, by 2028 the SSBN fleet will be slightly smaller, at eight, but will carry more warheads (768 up from the current 624 when all are available)

[17] Christian Le Miere and Jeffrey Mazo, "Arctic Opening: Insecurity and Opportunity."

[18] Hans M. Kristenses, "Russian SSBN Fleet: Modernizing But Not Sailing Much," FAS Strategic Security Blog, 3 May 2013. http://blogs.fas.org

[19] Hans M. Kristenses, "Russian SSBN Fleet: Modernizing But Not Sailing Much."

[20] Russia is rebuilding/modernizing its conventional navy, but the focus, according to IISS, is on other fleets (Black Sea, Baltic, Pacific, and Caspian) rather than on the Northern Fleet (the Northern fleet also benefiting, but the strategic shift is toward Asia).
Christian Le Miere and Jeffrey Mazo, "Arctic Opening: Insecurity and Opportunity."

[21] Hans M. Kristensen and Robert S. Norris, "US nuclear forces, 2014."

[22] Hans M. Kristensen and Robert S. Norris, "US nuclear forces, 2014."

[23] In March the US Navy announced that the USS New Mexico (out of Groton) and the USS Hampton (out of San Diego) were on an Arctic exercise. "Navy sends pair of attack submarines into Arctic for ice training," The Associated Press, 20 March 2014. ADN.com.

[24] In March the US Navy announced that the USS New Mexico (out of Groton) and the USS Hampton (out of San Diego) were on an Arctic exercise. "Navy sends pair of attack submarines into Arctic for ice training," The Associated Press, 20 March 2014. ADN.com

[25] Charles Digges, "Skyrocketing costs of launching 'new' nuclear submarine flex muscles Russia does not have," Bellona, 14 August 2012. http://www.bellona.org/articles/articles_2012/severdvinsk_delay

[26] "The Presidential Initiatives on Tactical Nuclear Weapons at a Glance," Arms Control Association, August 2012. http://www.armscontrol.org/factsheets/pniglance

[27] Hans M. Kristensen and Robert S. Norris. "Russian nuclear forces, 2012."

[28] "Status of World Nuclear Forces, End-2012," Federation of American Scientists.

[29] Thomas Nisen, "More nukes on Kola," *Barents Observer*, 10 January 2013. http://barentsobserver.com/en/security/2013/01/more-nukes-kola-10-01

[30] Christian Le Miere and Jeffrey Mazo, "Arctic Opening: Insecurity and Opportunity."

[31] Some of the treaties related to these zones are at different stages with regard to the signature, ratification and entry into force, as well as with regard to the signature and ratification of their associated protocols containing security assurances from the NWS.

[32] Tlatelolco, 33 countries; Rarotonga, 13; Pelindaba, 52 (38 signed and ratified and 16 signed but not yet ratified); Bankok, 10; Central Asia, 5; Mongolia, 1.

[33] UNODA, Treaty on the Non-Proliferation of Nuclear Weapons (NPT), http://www.un.org/disarmament/WMD/Nuclear/NPTtext.shtml.

[34] Axworthy, "Proposal for an Arctic Nuclear-Weapon-Free Zone."

[35] Buckley, "An Arctic Nuclear-Weapon-Free Zone."

[36] Prawitz, "The Arctic: top of the world to be nuclear-weapon-free."

[37] Prawitz, "The Arctic: top of the world to be nuclear weapon free."

[38] Jan Prawitz, "A Nuclear Weapon Free Arctic: Arms Control 'On the Rocks'," in Vestergaard, ed., Conference on an Arctic Nuclear Weapon Free Zone.

[39] Michael Hamel-Green, "Existing Regional Nuclear-Weapon-Free Zones: Precedents that could inform the Development of an Arctic Nuclear-Weapon-Free Zone," in Vestergaard, ed., *Conference on an Arctic Nuclear Weapon Free Zone*.

[40] Thakur, "Stepping Stones to a Nuclear-Weapon-Free World," p. 19.

[41] Hamel-Green, "Existing Regional Nuclear-Weapon-Free Zones."

[42] Prawitz, "A Nuclear Weapon Free Arctic: Arms Control 'On the Rocks'."

[43] Buckley, "An Arctic Nuclear-Weapon-Free Zone."

[44] Thakur, "Stepping Stones to a Nuclear-Weapon-Free World," pp. 16–17.

[45] Jan Prawitz, "The Arctic: top of the world to be nuclear weapon free."

[46] Prawitz, "The Arctic: top of the world to be nuclear weapon free."

[47] Hans M. Kristensen and Robert S. Norris, "Russian nuclear forces, 2014."

[48] Kristian Åtland, "Michail Gorbacheve, the Murmansk Initiative, and the Denuclearization of Interstate Relations in the Arctic." *Cooperation and Conflict: Journal of the Nordic International Studies association*, 43:3 (2008), pp. 289–311.

[49] Anatoli Diakov and Frank Von Hippel, *Challenges and Opportunities for Russia-U.S. Nuclear Arms Control,* A Century Foundation Report (New York, Washington: The Century Foundation, 2009), pp. 15–16.

[50] Franklyn Griffiths, "A Northern Foreign Policy," *Wellesley Papers* 7 (Toronto: Canadian Institute of International Affairs, 1979), p. 61.

[51] This is only largely the case because the Pelindaba Treaty in fact helped to confirm the denuclearization that took place in Africa when South Africa divested itself of nuclear weapons, and in other regions, like Tlatelolco, when states with nuclear weapons programs agreed to halt them and the NWFZ solidified that posture into the future.

[52] Michael Byers, *International Law and the Arctic* (Cambridge: Cambridge University Press, 2013), pp. 256–57.

[53] "European Parliament calls for sanctuary around North Pole area," Nunatsiaq Online, 13 March 2014. http://www.nunatsiaqonline.ca/stories/article/65674european_parliament_calls_for_protection_of_high_arctic/

[54] Thakur, "Stepping Stones to a Nuclear-Weapon-Free World," pp. 16–17.

[55] Thomas Axworthy explored such a zone in an address to Canadian Pugwash, 26 October 2012: "Revisiting the Hiroshima Declaration: Can a Nordic-Canadian Nuclear-weapon-free Zone Propel the Arctic to Become a Permanent Zone of Peace?"

[56] Torbjorn Graff Hugo, "An Arctic Nuclear-Weapon-Free Zone: A Norwegian Persepctive," in Vestergaard, ed., Conference on an Arctic Nuclear Weapon Free Zone.

[57] George P. Shultz, William J. Perry, Henry A. Kissinger and Sam Nunn, "Deterrence in the Age of Nuclear Proliferation: The doctrine of mutual assured destruction is obsolete in the post-Cold War era.," *Wall Street Journal*, 7 March 2011. http://online.wsj.com/article/SB10001424052748703300904576178760530169414.html.

[58] ICC Resolutions 77-11, 1983, and 98-28, 1998.

[59] Byers, *International Law and the Arctic*, p. 160.

[60] Michael O'Hanlon and Steven Pifer, "Obama's aim to reduce nuclear threat," Brookings, 12 February 2013. http://www.brookings.edu/research/opinions/2013/02/12-obama-nuclear-threat-ohanlon-pifer

[61] Vladimir Rybachenkov, "An Arctic Nuclear Weapons Free Zone – A View From Russia," Presentation to 26 September 2012 seminar of the Danish Institute of International Studies: "Arctic Nuclear Weapons Free Zone – Challenges and Opportunities." http://www.armscointrol.ru