



STEWARDSHIP
as
CONCEPT AND PRACTICE
in an
ARCTIC CONTEXT

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WHAT IS STEWARDSHIP IN CYBERSPACE?

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This paper is about stewardship and how the word and concept might apply in the Arctic. I say “might” because as far as I can tell there is no consensus or even debate in this region or any other, on what “stewardship” means, on what specifically it calls for, and on how it is to be performed in the face of widespread ignorance and indifference, to say nothing of resistance. Instead, and rather like “security,” “stewardship,” when it is cited, tends to be deployed rhetorically as a positive signifier to generate support for whatever is favoured, usually in the field of renewable-resource management. I say by way of caution that “stewardship” has neither been fashioned into an instrument nor tested to see how it performs but still I believe it warrants our attention. Compared with “sustainable development,” “environmental security,” or “environmental justice,” “stewardship” has greater potential, in my view, to capture and actuate notions of how we humans ought to relate to the rest of Nature. The word is therefore freed of quotation marks in what follows.

My ideas of stewardship are derived from and continue to be keyed to the political experience of Arctic international relations at the regional level. Although there is a substantial body of knowledge about co-management or public-private cooperation in local governance of Arctic resource use, stewardship itself has neither been locally conceptualized nor applied in the governance of Arctic regional or subregional affairs, for example, in adaptation to global warming, oil-spill prevention and response, regulation of commercial navigation, and so on. I therefore do not focus here on stewardship, or what might count as stewardship, in terms of region-wide on-site nitty-gritty action. Rather, I explore its potential to create preconditions for its own success when those preconditions are lacking.

THE ARCTIC AS MILIEU

Some define the Arctic as everything north of the Arctic Circle: the line around the northern hemisphere where the longest night in the winter and the longest day in the summer both occur. I prefer the definition that says it is everything north of the tree line on land and of the 10 degree Celsius isotherm for the month of July at sea. Either way, the Arctic itself is moving north. As the Earth continues to tilt on its axis relative to the sun, the circle shifts some fifteen metres north each year. More obviously, in rendering the region steadily more accessible from the south, global warming also moves tree lines and isotherms north, albeit at varying rates depending on the location. As an icy milieu the Arctic is shrinking. The north is being denorthified. Given truly relentless warming, such as to one day require Arctic air conditioning in darkness at noon on December 21 of a year, the world’s cryosphere could vanish altogether.

Warming, two times more severe in the Arctic than in areas to the south, is today destroying an ancient habitat and opening the way for new plants, mammals, and fish in what some might greet as a display of creative destruction. Definitely not to be greeted, global warming destroys the preconditions for Arctic indigenous peoples to exercise and thus to maintain cultures and ways of life

based on respect for the material environment and living things in it. The disastrous indigenous experience of global warming is a distant early warning of what could be in store for the rest of us down south. Meanwhile, we to the south are aroused by the prospect of material gain from the increasingly accessible and also the increasingly valuable oil, natural gas, and hard mineral resources of the region. Striving to empty the Arctic of oil and gas, we accelerate the warming that not only shrinks the region and makes it less hospitable to established life forms, but also makes the Earth increasingly hostile to human life. Furthermore, in heating the planet with Arctic hydrocarbons, we are also heating the Arctic's permafrost and the vast reserves of methane it contains. Methane is twenty times more potent as a greenhouse gas than CO₂. Some analysts think that an Arctic permafrost tipping point is approaching. If it is passed we can expect a surge in global warming, in worldwide human habitat destruction, and in the endeavour to geo-engineer the planet to protect the atmosphere.

Although the Arctic contributes mightily to the world's climate, its own climate is made elsewhere. What can be done in the Arctic alone to help the world draw back from the edge of a cliff of change is limited. But something like this can be said of all regions. It does not absolve other regions, and their constituent populations and governments, of the responsibility to act. Nevertheless, compared with other regions, the Arctic is a site of warning as well as warming, and is destined to focus global attention on warming, what to do about it, and how. If the concept of stewardship is to be of use in figuring out what to do and how to do it within the Arctic and, by extension, globally, it will have to be derived in part from an understanding of the region's milieu—social and political as well as physical.

As distinct from Antarctica, the Arctic is inhabited, militarized, and industrialized. The region's population is some four million, roughly half of whom are found in the Russian Federation which itself is experiencing a catastrophic depopulation, intentionally so in what Russia considers to be unprofitable Arctic areas.

Despite the presence of some cities, again principally in Russia, the region is very sparsely populated. It is, however, home to a wide variety of indigenous peoples who, while they may seek revenue from resource development, remain close to and derive strength from the land, ice, and waters. In varying degree, indigenous peoples also have rights derived from agreements with the Arctic states. There are eight of these, five of which face onto the Arctic Ocean (Canada, Denmark/Greenland, Norway, the Russian Federation, and the United States/Alaska). The remaining three (Finland, Iceland, and Sweden) risk being sidelined insofar as the region's agenda is oceanic rather than terrestrial. All eight states, together with several international Arctic indigenous peoples' organizations, are gathered in the Arctic Council, the region's chief international forum. Indigenous representatives speak freely in the Council council but do not vote, that right being held by the Eight who proceed by consensus, which is to say without voting.

If there is to be region-wide stewardship in the Arctic, the Council will be central to it as a policy-setting and coordinating forum. Although the Council's capacities have increased in recent years to the point of binding the member states to collective action, they remain limited. This limitation is because the region is difficult to govern. It is peripheral in terms of votes down south, relatively placid compared to other areas of the world, heavily affected by extraregional forces, and fragmented in purpose. Basically the Eight experience the region not as an entity

but as a set of subregions. Awareness of physical and political interdependence is not high, although it is growing. By far the greater part of the region is subject to national control, the exceptions being the outer continental shelf under the Arctic Ocean and certain offshore boundary areas. Although the media of the Arctic countries and the wider world are full of reports of races for resources, meltdowns, and potential for armed conflict, including with non-Arctic countries, the governments of the Eight are at once firmly committed to the rule of law, broadly inclined to keep outsiders down if not altogether out, and reluctant to tie their hands with regulatory agreements that would govern resource development and devolve benefits to local inhabitants including, again, indigenous peoples. Sovereignty is the watchword for most of this. It directs attention to actual and potential possessions. It says we already have plenty to do in the national domain, which accounts for most of the Arctic, without venturing much beyond our borders. It blunts awareness of the milieu in which states operate and from which unwanted effects, short of outright challenges to national jurisdiction, may arise. By the same token, it favours “hard” rather than “soft” security practices.

Although the governments of the Eight think of the Arctic security situation as well in hand at present, the established security discourse continues to emphasize the acquisition and use of force. Armed force is indeed being acquired for use in Arctic conditions, but with few exceptions it is constabulary force and not war-fighting capability that’s being proposed or now coming on to station. To be sure, there is an awareness here of the international milieu beyond the water’s edge. But it tends to be biased more to threats than to reassurance, more to the rhetorical need to show strength in domestic policy

debate than to the current realities of physical security out in the region. Consistent with a view of security as self-help by free-standing sovereign states, the Arctic Council is forbidden, by means of a self-denying ordinance, to discuss military matters. All the while, the prevailing security discourse inhibits collective action on the mitigation of insecurity in climate change, on human development, protection of the Arctic marine environment from land-based pollution, on ecosystem-based resource management, and so on. The conventional discussion of security is integral to our business-as-usual approach to global warming and to the insecurity that’s coming with it.

As a political milieu, then, the Arctic is not receptive to a practice that would shift attention from possession to the conditions in which possession is exercised and enjoyed. At a time when all possession is jeopardized by physical abruption, by the threat of sharp breaks with long-standing conditions, possession goals continue to trump milieu goals in Arctic political practice. Politically we treat the Arctic as a given, even though it is obviously subject to transformative change. Nor are the politics of the region predisposed to international cooperation that would constrain the freedom of action of the Eight in coping with change. An understanding of Arctic stewardship that is able to make headway in responding to physical adversity will therefore have to come to terms with considerable political constraints. It will have to seek more promising physical conditions for human existence in political conditions that themselves are unpromising. In the Arctic, it will need to address prevailing conceptions of sovereignty and security.

STEWARDSHIP AS CONCEPT

Stewardship is the political practice of locally informed governance that not only polices but also respects and cares for the natural environment and living things in it for the combined benefit of humanity and Nature. This at least is how I have come to understand it and how it might be in the context primarily of Arctic international relations.

As a *practice*, stewardship consists of performances. These are deeds that do three things, when well done. They enact and create shared knowledge, beliefs, and also feelings about human-milieu relationships. Second, in so doing they create normative and epistemic ground for individual and collective agency to achieve what is fit and proper. The firmer and wider the ground that is created, the better the conditions for the intended performance. As with all practice, stewardship is more or less competent. Change in the physical and/or social milieu challenges established communities of practice. Yesterday's best practices seem not so good today. New performances emerge and seek recognition from society at large and a claim to determine public policy. For example, maximum yield is compelled to give way to maximum sustainable yield in the stewardship of forests and fisheries, to cite two industries in which the terminology of stewardship is well established. Now, however, sustainable yield may not suffice.

Stewardship is a *political* practice by virtue of its engagement in the struggle to shape norms, formal institutions of governance, and outcomes, all as they bear on human-milieu interaction. Dominated by concern for the state of the natural order, stewardship has been performed as a political activity aimed at managing resource flows or "ecosystem services" to society. It is becoming increasingly clear that it is

not resource flows but human activity that needs governance. Although humankind and Nature are now inexorably joined in a planetary ecosystem that may devastate us, humanity has so overwhelmed and socialized the global ecosystem that we must be considered as an independent variable, as a force that stands apart. The practice of stewardship has no choice now but to address this force directly, and therefore to become highly political. Among many other things, it has to rely less on the natural sciences and on management theory to support ecosystems "out there," and instead to make greater use of the social sciences and political philosophy in generating new capacity to translate ecosystem precepts into common practice "in here."

As should be evident, stewardship also entails a practice of *governance*. Individuals and groups acting in isolation or in parallel unilateral fashion may count for much. Indeed, we all ought to consider ourselves individually as stewards and to act accordingly. But the abrupt threats we face are of a magnitude that can be met only through large-scale collective action. This is action that works its way through many channels at once, through the highly informal generation of voluntary constraints on consumption, through ad hoc forums for doing better with less, and through formal institutions of governance to ease the way to adaptation.

To be at once ethical and effective, stewardship as a practice of governance is *locally informed* in its understanding of the situation and in its appreciation of the consequences of central determination and central inaction. Experience shows that the perceptions and judgments of governments far removed from the scene of concern will be less than fully adapted to situations on site if locals are not directly part of the process whereby situations are evaluated, priorities are selected, and official actions are

coordinated. Local participation in the determination of collective action, particularly the participation of indigenous peoples' organizations in an Arctic context, is also essential if the performance of stewardship is to be maximally ethical. Those who are not only most immediately knowledgeable but also most vulnerable to the consequences of remote decision-making must be directly included if outcomes are to be just. Indeed, in stewardship taken as governance, adaptation and ethics go hand in hand: decision processes that seem well adapted to physical realities but are unjust in reality will turn out not to have been well adapted.

Stewardship also sees to the *police* or good order of its domain against external intervention and injury from within. Again, our physical surround is now so much our creation that we have to act primarily on ourselves if we are to protect and preserve the environment that benefits us. The steward's performance in policing is therefore concerned primarily with human activity. Spatially, her writ is delimited. Within that space a legal order applies and is enforced. Stewardship is thus in part a physically coercive practice. It relies more on constabulary than on military force to secure the domain against direct human violation. When constabulary force is insufficient, the steward acts as though she were sovereign or calls upon others to assist in enforcement. To reduce reliance on physical force, she also strives to maintain and if necessary create an enabling moral order. Logics of appropriateness prevail but consequentiality is fully present. Moral coercion promises to punish human abuses of Nature as shameful, to reduce the social standing and future prospects of the offender, and thus to deter unwanted behaviour. For effective policing, therefore, the steward will not confine herself to the realm of law and order. She will also encourage widespread readiness

first to experience and then to act on feelings of outrage and anger in reaction to shows of incivility toward Nature.

Finally, stewardship is performed through deeds of governance that show *respect and care* for the physical surround and for living things in it in ways that benefit humanity and Nature alike. Merely to survive, humankind necessarily uses its physical surround and values it instrumentally rather than in and for itself. Too many of us making too hard use of our surround and the non-renewable resources in it threatens us and may oblige us to value Nature in and of itself and not mainly for its service to us. To the extent that it is formally understood, the practice of stewardship today seeks mutual benefit for humanity and Nature through governance arrangements and outcomes that respect Nature's carrying capacity. Care, I suspect, is also required of us as well as respect. Where respect is a distanced feeling, care is more intimate, even erotic, in its desire for the well being of and attachment with the other in Nature. In feelings such as these the steward of the future has additional reserves with which to bring on mass support for what she is up to.

As well, stewardship in a regional context is necessarily international. In principle, it can come from emulation of best practice and from parallel unilateral action without benefit of explicit agreement or formal interaction. In practice, it stems from ad hoc intergovernmental processes of guideline- and regime-making under the aegis of regional and also extra-regional forums. In all of this, a central regional institution is indispensable. In the case of the Arctic, it is the Arctic Council that provides the principal locus for *cooperative stewardship* at the regional level. The work of the Council is in the hands of the Senior Arctic Officials (SAOs) of the Eight. Although they do not themselves negotiate

measures of cooperative stewardship, much less act as stewards in policing the region physically, they do preside over an array of working groups from which coordination and some international regulation does emerge in consensual situation reports, voluntary guidelines, and even treaties that bind the Eight to agreed action. In the SAOs we have the eight stewards of the Arctic. To the best of my knowledge, they do not refer to themselves as stewards. Nor do they represent governments uniformly interested in Arctic international cooperation. Nor should we omit the indigenous peoples' representatives when it comes to stewardly contributions to the Council's work. Still, it is the SAOs who, in my opinion, best embody the region's emergent capacity for cooperative stewardship.

To wrap up these comments on stewardship as concept, I draw attention to *Principles of Ecosystem Stewardship*, written by a team led by F.S. Chapin of the Institute of Arctic Biology at the University of Alaska, Fairbanks. The volume is impressive in its presentation of the case for adaptive governance and co-management of coupled social-economic systems in order to achieve resilience-based resource use in a world of accelerating directional change, extreme events, and degradation of the life-support systems on which society depends. There is no Arctic focus, indeed no real consideration of international regions here. But there is plenty to stir both the imagination and the critical faculties. Noteworthy on both accounts is the proposal for environmentalists and ecologists, actually for all of us, to move on from a practice of ecosystem management to one of ecosystem stewardship.

Ecosystem stewardship comes down to adaptive management of variables that affect the conditions in which ecosystem services may or may not be rendered to society. The central idea is

for us to reorient our efforts from sustaining ecosystem services or outputs in their historical condition (as with optimum sustained yields), to sustaining the capacity of ecosystems to provide services in historically unprecedented conditions. As the authors put it, "Rather than managing resource stocks and conditions, ecosystem stewardship emphasizes adaptively managing critical slow variables and feedbacks that determine future trajectories of ecosystem dynamics." The book is packed with ideas for social and political action to create conditions to sustain ecosystems. But it is truncated when it comes to creating conditions to sustain stewardship understood as a political practice. Loaded with what-to-dos in creating conditions to enable ecosystems, it is short on how-to-do-it when it comes to enabling stewardship per se. Strong on social and political action to shape ecosystem performance, it is weak on action to encourage and enhance the performance of stewardship. The ecosystem concept of stewardship assumes the existence of the very thing it needs in order to succeed: dedicated stewards with widespread public support. If ecosystems are to be sustained, stewardship must pay closer attention to the preconditions for its own success.

STEWARDSHIP AS PRACTICE

For those who just want to get on with it, stewardship is readily reduced to what stewards do. The Forest Stewardship Council of Canada operates a voluntary market-based mechanism that uses standard-setting, independent certification, and labeling of forest products to ensure that Canada's forests are healthy. Ontario's Private Land Forestry Stewardship Program fosters ecologically sound forestry management on private lands through information and incentives, and by providing a framework for the protection of resources at the private level. It is roughly

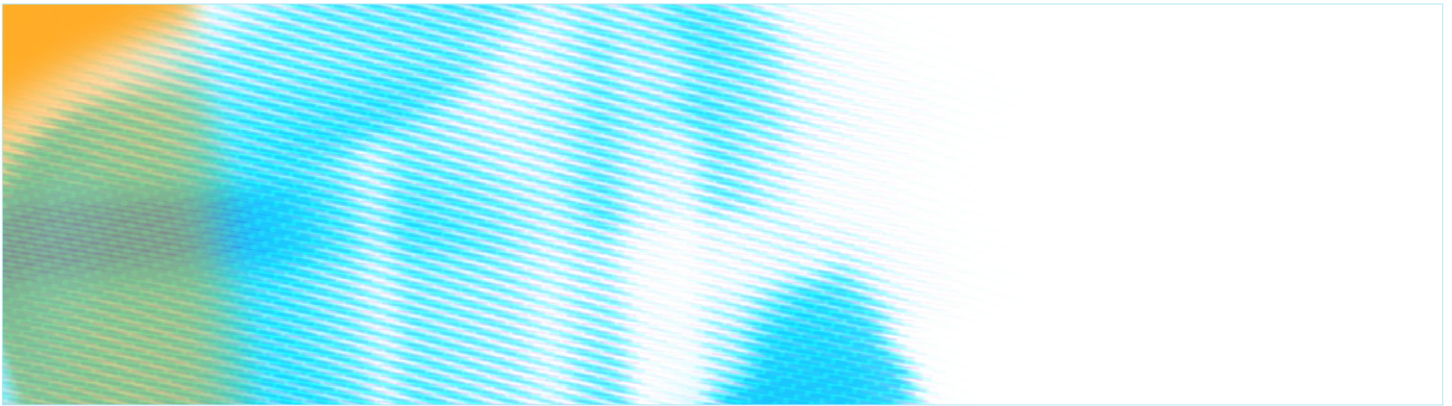
the same for the Marine Stewardship Council, which recognizes well-managed and therefore sustainable fisheries in Antarctic and southern ocean waters. The US National Oceanic and Atmospheric Administration, for its part, has missions that include environmental assessment and prediction, and environmental stewardship including protection of ocean, coastal, and Great Lakes living marine resources while assisting in their economic development. Equally we could look to the Arctic Council's working groups and task forces on contaminants including mercury, on the monitoring of biodiversity, protection of the marine environment from both land- and sea-based activity, capacity-building for indigenous peoples and Arctic communities, including on adaptation to climate change, on short-lived climate forcers, emergency preparedness, Arctic marine pollution prevention, and so on.

All in all, there is already plenty of steward-like activity going on out there both nationally and internationally. Much but not all of it is resource-related. In the Arctic, quite a lot reflects the sovereign's determination to protect the domain and the living things in it against danger and degradation, for example, in the pre-positioning of search-and-rescue equipment, or in oil-spill response including the capacity for prompt relief-well installation in ice-covered waters. Whatever the character of the stewardship that is on display, we are looking at a host of related but separate activities that have yet to be linked either conceptually or practically to achieve greater political clout and greater on-site effectiveness. They prompt the remark that stewardship is biocentric in intent and anthropocentric in practice.

By biocentric, I mean concerned with life and the activity of living things, plant as well as animal, including of course humankind out to its mediated extensions in intersubjectivity and the cybersphere. While the ecologist may value

non-human life forms primarily as they generate ecosystem services for society, the steward, acting also from respect and care, will be more inclined to value living things in and of themselves. Where the ecologist seeks to enhance ecosystems as providers of resources, the steward focuses on what it takes to make things happen for ecosystems in political systems from the local on up. Striving to build and maintain conditions favourable to practical action, she may endeavour to sway influentials to her way of thinking and doing by showing how it helps them meet their own needs. As well, she may appeal to attentive publics in an attempt to convince them of the value of stewardship, sometimes by appropriating familiar practices from unrelated spheres of activity. Three examples follow as they apply to would-be stewardship in an Arctic context. I say "would-be" to remind us again that stewardship is still a long way from crystallization as a practice in the region.

As indicated, Arctic political, military, and international legal elites are concerned principally with sovereignty, security, and resource development. These are the main agenda items of the Eight, and they also happen to be off the agenda of the Arctic Council. To be sure, the Eight are prepared to address ecological, environmental, and quality-of-life issues in the Council, predominantly in a non-binding fashion. But they do so in a tacit acknowledgment of a shared need to minimize both constraints on development and incentives for international discussion of legal disputes, and in an explicit acknowledgment of the ban on military matters. The question is whether and how a practice of stewardship might tap into the underlying sovereignty and security concerns of the Eight and, in so doing, improve stewardship's own prospects.



The Arctic sovereign – in effect, the decision-makers – seeks the benefits of sole possession at a reasonable cost in a rapidly changing world. This is a world that threatens his domain with deprivation from abroad. It also presents him with opportunities to reduce the costs of governance and increase the well-being of the governed. All the while it leaves intact his formal authority and title to it. Threats are of two kinds: those that present point-source adversity, as in the case of an up-wind or up-current oil-spill disaster in an adjacent jurisdiction; or diffuse threats to life and quality of life for which no one in particular is responsible, as with local consequences of global warming, or those that arise from the long-range transport of toxins. Opportunities, for their part, arise when cooperation makes it possible to reduce the costs of governance, for example in the provision of satellite monitoring capabilities, costs that would be substantially greater or intolerable if the sovereign were to act alone. Threats and opportunities such as these present the sovereign with a conundrum: to join in collective action that at once deals with the dilemmas of interdependence and generates perceived and real threats to his freedom of action, especially in countries that hold Arctic sovereignty close to the heart of the national identity.

The Arctic sovereign's problem is to make a transition from exclusivity to inclusiveness in

safeguarding the nation and its environment in an era when autonomy continues to be valued but self-help is less helpful. We may continue to help ourselves but others must also be helped in collective action or, increasingly, we suffer. Signs of a transition to inclusive sovereignty are gathering. Consider, for example, "enlightened sovereignty." A term proposed by Prime Minister Stephen Harper in a speech to the World Economic Forum in Davos, Switzerland, on 28 January, 2010, the germ of the idea was,

Less about narrow self-interest in sovereignty's name, than an expanded view of mutual-interest in which there is room for all to grow and prosper. Enlightened sovereignty, then, the natural extension of enlightened self-interest.¹

This statement was with regard to shared responsibility for the global economy. Although it is a long way from economic cooperation to cooperative stewardship, the background sense of global interdependence, vulnerability, and need to work together that came with the economic recession of 2008-09 is still with us. When circumstances oblige Arctic policy-makers to pursue the environmental potential of "enlightened sovereignty" or its equivalent, they should find in a discourse and, who knows, a practice

1 "Statement by the Prime Minister of Canada at the World Economic Forum in Davos, Switzerland January 28, 2010," available at pm.gc.ca/eng/media.asp?id=3096.

of cooperative stewardship a ready means of enhancing the quality of national sovereignty in conditions of increasing interdependence.

Turning from sovereignty to security, we find that international practices amounting to cooperative stewardship already serve to meet the priority needs of Arctic decision-makers. Despite the prohibition of military matters in discussions at Arctic forums, regional security is being considered and strengthened indirectly and effectively. This strengthening occurs with negotiation and joint action that is at once of direct benefit on issues such as search and rescue, marine transportation, and oil-spill response, and indirectly beneficial in building shared interests, vested interests in the continuance of good relations per se, and habits of working together. As well, the commitment and exercise of national military capabilities for international civil purposes serve to engage separate military establishments and to build solidarity among the Eight, principally between the Russian Federation and the rest.

Accordingly, whereas a hard security agenda of region-wide nuclear and conventional arms control and military confidence-building is not on, practices of cooperative stewardship do nevertheless build security. They accomplish this security in deepening the habit of cooperation, in thickening the web of mutually advantageous regional interdependence, in creating trust, and in constructing an increasingly safe and stable Arctic region. That said, what has already been achieved for security by way of cooperative stewardship is still very largely unacknowledged. Much of it could be undone by conflict among the Eight that originated outside the Arctic. All the more reason, I say, to build common cause in stewardship. In due course, cooperative stewardship could itself gain recognition as a source of national and international security. If so, it would

have improved its own prospects by rendering larger services to society.

Finally, stewardship may widen its public support and operational effectiveness by associating itself with related practices, for example with the responsibility to protect or “R2P.” The work of an international commission, established by Canada, on intervention and state sovereignty, R2P is contested in principle and selective in application: yes for Somalia, Bosnia, Kosovo, and Libya, and no thus far for Syria. Still, for now it is on the way to being normal. R2P is based on the proposition that sovereign states have an obligation to protect their citizens from avoidable catastrophe in large-scale loss of life and ethnic cleansing. When they fail to protect, the obligation to act falls to the larger community of states up to and including military intervention. Prevention is the prime attribute of R2P. It must be exhausted before coercive measures such as sanctions, prosecution, and, in extreme cases, the use of armed force, are taken. So how might R2P apply to cooperative stewardship?

In R2P and cooperative stewardship we have emergent practices of sovereign engagement that cut through thinning borders. From the steward’s point of view, human-made global warming faces us all with avoidable large-scale catastrophe—ecological catastrophe of wholly unprecedented scope and consequence. R2P, in my view, applies here not in its authorization of armed force, but in its insistence on the sovereign obligation to protect, and on the primacy of prevention. In R2P, cooperative stewardship has a repertoire of allied concepts and experience that is capable of offering valuable guidance in institutionalizing new duties of sovereign states, to say nothing of widening the steward’s base of support. As to reciprocal benefits for R2P, cooperative stewardship ought to assist in the establishment of critically important new duties

to protect, including duties to provide environmental security.

Given the acknowledged and growing force of ecological variables in determining the likelihood and magnitude of human catastrophe, the steward has an incentive to move beyond the tasks of ecosystem management and, in selective fashion, to work for an extension of sovereign protection. In my opinion, the responsibility to protect must now be extended to Nature. In the as-yet barely self-aware practice of cooperative stewardship we have the potential to enlarge the sense of community that engenders obligations to respect and care for the other in Nature as well as humanity. This sensibility is what the ecologist and philosopher Aldo Leopold called the “land ethic,” which, when accepted, “simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land.” In a long overdue ethical practice that renders humanity and the land into a community, we have the basis for an R2P that addresses the overriding challenge of the twenty-first century.

Sovereignty, security, R2P, stewardship, and indeed environmental security all intersect. Done right, they are not done in isolation. There are synergies among them that stand to improve what otherwise would remain the in-silo performance of each. In its capacity to command support and to ensure quality of outcomes, cooperative stewardship in an Arctic context can only benefit from engagement with allied practices.

WHAT NEXT?

Stewards act as managers, trustees, or governors on behalf of another or others, principally the sovereign in the discussion here. They serve. Circumstances increasingly require them to take

the initiative, to bring threats and opportunities to the attention of those they serve, indeed to shape the conditions in which their practice is performed. But in a world of transformative change might the practice of stewardship itself need not only to change but to be transformed?

Let us assume that the Earth’s climate is approaching a tipping point in an abrupt destruction of the cryosphere following the release of huge amounts of methane from the Arctic’s permafrost. We may not be there yet, but let us say we are already faced with the reality of sharply accelerated global warming, an end to all attempts to reduce greenhouse gas emissions in the face of overwhelming methane increases, and unprecedented human suffering and disruption everywhere. How might Arctic stewardship be expected to fare in a world that has left mitigation behind and been forced to accept not warming but heating as it awaits whatever comes next? Poorly is surely the answer.

In a context of permafrost abruption, the physical domain for the practice of Arctic stewardship will be convulsing and with it the needs of dependent human populations. Emergency response and survival will be the prime directives. The thought of demonstrating respect and care for the other in Nature and humanity will go by the boards. The same applies to the land ethic, the responsibility to protect, to locally informed governance, to the management of interdependence, and so on including cooperative stewardship. Post-mitigation, stewardship risks being reduced to something like policing the perimeter against trespass and invasion.

I take it that we must mitigate the emission of greenhouse gasses swiftly and effectively if we are to preserve the cryosphere and the planetary climate that depends upon it with any degree

of assurance. But we also need to act on the thought that mitigation may fail. This can be done in three ways. We can redouble our efforts for mitigation after taking a hard look straight at the consequences of mitigation failure. Secondly, we can double down on mitigation after considering and rejecting the consequences of what may be called pre-emptive adaptation, this in the form of geo-engineering. And, alternatively, in pursuing the geo-engineering option we can let up on mitigation and decide to act forcefully for adaptation prior to the occurrence of what is taken to be an avoidable abruption. In an Arctic setting we should opt for mitigation, and also explore the fall-back potential of pre-emptive adaptation.

Geo-engineering of the Earth's climate, for example in launching millions of tonnes of sulfite particles into the atmosphere to create a reflective shield at 100,000 feet that turns sunlight back into space, is super-loaded with uncertainty as to its local and regional as well as global consequences if implemented. The idea itself is so zany as to compel support for zero greenhouse gas emission when it is understood. By the same token, in its extremity it alerts us to the desperation of our situation, which is one where permafrost or other abruption may occur before mitigation can be made effective. Either way, an authoritative discussion of geo-engineering is needed.

A global deliberation among 190-odd governments cannot be expected to yield a consensus on the science, much less on the comparative advantage of alternative engineering solutions, for locations the world over. Region-based discussion may have to suffice, especially if unilateral attempts at climate protection are to be forestalled. If so, the Arctic is the place to start in view of its critical role in global warming, the small number of states required to achieve consensus, and the Arctic Council's track record of

scientific appraisal as seen above all in the *Arctic Climate Impact Assessment* of 2004. As well, to the extent that we are interested in moving beyond ecosystem management to something like land-ethic stewardship, the presence of Arctic indigenous peoples, and their appreciation of climate change in particular, should help to ensure that the Council's evaluation is ethical and also well attuned to physical realities.

What then of stewardship in a world that is faced with a choice between mitigation and pre-emptive adaptation? Arguments for emergency action in advance of need would surely make the case for avoiding the consequences of inaction: survival mode and sharply greater determination to extract resources irrespective of the needs of ecosystem maintenance. Geo-engineering should therefore be compatible with an ecosystem services understanding of stewardship. Everyone remains the same, but only smarter. But the outlook is different for mitigation. The mitigating steward will not go along with the unstated assumption that it is easier to change Nature than it is to change human nature. In making more of stewardship as a means of changing human conduct, he will focus on the social in social-ecological systems. In its capacity to alert people not to what they should do, but to who they should be, a land-ethic stewardship has transformative potential. Transformations are likely to occur when large numbers of people are faced with sharp breaks in the state of Nature on which they have always relied.

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