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DEBATE

THE ARCTIC: CHALLENGES, PROSPECTS AND OPPORTUNITIES FOR INDIA

This debate endeavours to highlight the changes underway in the Arctic region and to understand the opportunities and challenges they present for India.

The National Snow and Ice Data Center (NSIDC) of the United States has reported that the Arctic sea ice cover melted to its minimum extent for 2012 on 16 September and fell to 3.41 million sq km (1.32 million sq miles), the lowest summer minimum extent since record-keeping began in 1979. According to some modelling studies undertaken by scientists on the phenomenon of shrinking ice, the Arctic may even be ice-free by 2050. A direct consequence of this change could be a rise in sea levels. A warmer Arctic could also result in increased heat and more climate variations. The consequences of these changes could be felt as far as the Equator. Indigenous people, wildlife and infrastructure would also be adversely affected.

Arctic warming could also harbinger new geopolitics in the region that could trigger great-power rivalry. Four of the nations bordering the Arctic Ocean, i.e. Canada, Denmark (Greenland), Norway and Russia have announced their respective exclusive economic zones (EEZ) in the region and are preparing to file their claims on extended continental shelf (ECS) at the United Nations Commission on the Limits of the Continental Shelf (CLCS). They have so far underplayed their rival claims and agreed to settle them within the framework of the 1982 UNCLOS III. The US, which has not ratified the Convention, has otherwise keenly followed these claims.

Several opportunities have also emerged from the melting of the Arctic ice in the form of shipping routes, resources and new territories. The shipping route through the Arctic, also referred to as the Northern Shipping Route (NSR) is a reality and is currently navigable for several weeks in summer, until the end of November. The NSR has cut sailing distance between Yokohama in Japan and Rotterdam in the Netherlands by nearly 5000 nautical miles, saving approximately ten to fifteen days of passage time. By 15 October 2012, thirty-five vessels had transported a total of 1,022,577 tonnes of cargo between Europe and Asia through this route as against 34 vessels in 2011. However, the route is still underdeveloped, due to lack of charts, navigation aids and lack of port infrastructure for repairs; search-and-rescue resources are also still to be developed.

There are large deposits of oil and gas, minerals and fish in the Arctic region and the five Arctic littoral countries are becoming quite assertive about exercising their sovereignty over the newfound wealth. Their naval forces have been increasingly entrusted with new missions and roles to guard their national interests against any hostile activity, be it political, economic or environmental.

The Arctic Council, a high level intergovernmental forum comprising the Arctic littoral states along with the Arctic indigenous communities and other Arctic inhabitants, was set up in 1996 to address common issues of sustainable development and environmental protection in the Arctic. Though it lacks regulatory powers for compliance and enforcement, it has been successful in promoting cooperation, coordination and interaction among the Arctic states on common Arctic issues, particularly those relating to sustainable development and environmental protection. Besides, there are numerous bilateral/multilateral arrangements to discuss various issues concerning the region.

The ongoing climate-induced changes in the Arctic region have attracted the attention of several Asian countries. Some of these have set up scientific research stations in the region. The Asian countries see several economic opportunities to exploit the living and non-living resources and are also keen to take advantage of shrinking Arctic ice by exploring new shipping routes between Europe and Asia.

Several Asian states are also aggressively jockeying for political influence in the Arctic region and to join the Arctic Council as permanent observers. The dominant view among the Arctic claimant states about the Asian interest in the region is that Asian countries would be welcome if they play a constructive role in the evolving politico-economic-strategic dynamics in the region.

India's interest in the Arctic has been limited to scientific studies. It has established a research station, *Himadri*, on the Svalbard archipelago. India has undertaken several scientific expeditions and is now planning to acquire an ice-class vessel to support its polar research and studies programme. There are fourteen national research institutions that support India's polar programme, which is coordinated by the National Centre for Antarctic and Ocean Research (NCAOR) in Goa, under the Ministry of Earth Sciences (MoES), Government of India. India also advocates and would like to play a vital role in making the Arctic a region of peace and stability.

The Indian narrative on the politico-strategic developments in the Arctic region is still evolving. Some advocate that the Arctic should be declared as "global commons" and "common heritage of mankind"; others would like to

see India participate in the unfolding dynamics of routes and resources; while a section would like to pursue only scientific studies related to the polar regions. Recently, on 6 November 2012, India submitted its application to Sweden for Observer status in the Arctic Council.

These rapidly unfolding political-economic-strategic-scientific developments in the Arctic region raise a number of questions for India:

1. Should India be content with its ongoing scientific engagements in the Arctic and work towards ensuring that the region remains "a pole of knowledge and science"?
2. Is there a need for India to formulate a resource strategy for the Arctic region?
3. What should be the core of its Arctic resource diplomacy?
4. How will the Arctic shipping routes linking the Atlantic and the Pacific impact trade through the Indian Ocean? and
5. What initiatives should India take to develop human and material infrastructure to participate and partake in the unfolding Arctic dynamics?

The *Indian Foreign Affairs Journal* posed these questions to the following four eminent scholars and policy practitioners.

Vijay Sakhuja, Director (Research), Indian Council of World Affairs, New Delhi, summarises:

The Evolving Indian Narrative

There is a view that Polar Regions are "global commons" and the international efforts should be to preserve their ecology. It is also believed that if India joins the Arctic Council, it would result in accepting the rights of the Arctic littorals over the Arctic Ocean. The other narrative endorses the idea that India should build a good understanding of the evolving politico-legal-strategic developments in the Arctic region and formulate a strategy to exploit the Arctic resources. Another view argues that India being a strong advocate of nuclear disarmament, it should advocate for a demilitarized and nuclear-free Arctic. In essence, the Indian narrative on the Arctic region is still evolving.

Kishore Kumar, Consultant, Centre for Ocean and Environmental Studies (COES), New Delhi, is of the opinion that:

Push for a 'Global Commons' Theory

The establishment of the research station *Himadri* has propelled India to the forefront of polar research in the world. Indian scientific research in

the region is currently nascent, but could have a growing role in contributing to understanding the climate change impacts, monsoonal tele-connections, microbiology, as well as problems of pollution in the Arctic region. The region may seem distant, but there is growing recognition that far-reaching changes in this ecologically pristine region will have long-term impacts on India and the world. India cannot remain immune to these developments.

Like earlier developments in frontier areas like nuclear and deep-sea technologies, the Arctic regime is also seeking to deny access to presumed outsiders. There are voices within the country asking to join the international scramble for Arctic resources via membership of the Arctic Council with permanent observer status. This could imply India accepting the exclusive club of the Arctic and conceding their right to rampant economic greed and consequent degradation of the region, with long-term impacts. Instead, India needs to use its growing international economic and technological status to push for the global commons theory, for which it will receive widespread international support and acclaim.

Uttam Kumar Sinha, Fellow at the Institute for Defence Studies and Analyses (IDSA), New Delhi and Adjunct Professor at the Malaviya Centre for Peace Research, Banaras Hindu University, discusses:

India and the 'Age of the Arctic'

India's Arctic strategy should be primarily to advance scientific research in the Arctic and simultaneously build strong bilateral cooperation with the "northern" countries such as Norway and Russia. The principal partner will continue to be Norway in scientific endeavour and Russia on the economic front. …

As to the economic opportunities in the Arctic, India does not have the resources to venture in a big way in the region. Having applied for observer status, India can think about ideas that can help in Arctic development, for example supporting the efforts to make the Arctic a military-free zone. Already, a seabed treaty forbids the stationing of nuclear weapons on the Arctic Ocean floor. The A5 have also acceded to the Antarctic Treaty of 1959 that makes Antarctica a nuclear weapon-free zone and a military-free zone. India could also advocate sustainable resource development and ecological protection in the Arctic, which the A5 are trying to promote cooperatively.

The Arctic, however, lacks a compact environmental protection regime – it is a collection of customary international law and varied bilateral and

multilateral instruments, with no unifying connector. India can act as the unifying connector and help bring together a robust regime. This will require connecting science to policy and policy to people. With a toehold in the region, India can then gradually scale up its capabilities.

H.P. Rajan, former Deputy Director, Division for Ocean Affairs and the Law of the Sea, United Nations; and Advisor, Department of Ocean Development (now Ministry of Earth Sciences), Government of India, recommends that:

Arctic Governance Issues: India should take a Lead Role

Although India's interest in the Arctic is relatively new, it has more than thirty years of scientific research experience in the Antarctic. This, coupled with India's active involvement with the Law of the Sea negotiations for over fifty years, as well as experience in deep-sea exploration, makes its expertise unique. India is well represented in all the institutions established by the Convention. It is time for this country to take a lead role in the Arctic governance issues within the overall framework of the existing legal regime. The opportunity is ahead.

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The Evolving Indian Narrative

Vijay Sakhuja*

The Arctic sea ice hit its lowest extent in 2012. The ice has also thinned, and the mean ice draft, i.e. the ice extending below the surface of water at the end of the melt season, has reduced. The water flowing from the Atlantic into the Arctic Ocean is approximately 2°C warmer than nearly 2000 years ago. Also, nearly 25 per cent of the permafrost and icy soil in the northern hemisphere could defrost. Permafrost is frozen soil that can be hundreds of metres deep. Scientists have predicted that thawing permafrost will result in nearly 300 to 400 billion tonnes of methane released into the atmosphere; and that "if all Siberian permafrost thawed and released its carbon in the form of heat-trapping carbon dioxide, it could nearly double the 730 billion metric tonnes of carbon now in the atmosphere".

Soot emitted by inefficient industrial processes such as the burning of fossil fuels and natural-gas flaring, biomass decomposition and vegetable matter decomposition and smoky cooking appliances has also contributed to global warming. Using satellite data and computer models, a study by NASA scientists has concluded that "black carbon may have a significant warming impact on the Arctic". The research notes that nearly 33 per cent of the soot that originates in South Asia is from burning biomass or vegetation; the balance is from Russia, Europe and North America.

The research also shows that the Arctic could be ice-free seasonally in the next two to three decades. These changes offer a mixed bag of opportunities and challenges. The opportunities emerge in the form of new routes and resources – living and non-living. The challenges relate to the possible adverse impact on the Arctic environment, flora and fauna and fish stocks in the region. The human footprint in the form of tourism and infrastructure would impact the fragile ecosystem, including the lifestyles of the indigenous people. Besides, they are now confronted by the oil and gas companies making a beeline to exploit the resources in the region.

The thawing of permafrost could also adversely impact the infrastructure erected on it, such as collapse of buildings, cracking of roads and rail tracks, and rupturing of oil pipelines.

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Routes and Shipping

Issues related to shipping routes through the Arctic are fast gathering momentum. The Northern Sea Route (NSR) is expected to cut sailing distance between Yokohama in Japan to Rotterdam in the Netherlands by nearly 5000 nautical miles, saving approximately 10-15 days of passage time. However, the route is still underdeveloped due to lack of charts, navigation aids and port infrastructure for repairs; the search-and-rescue resources are also still to be developed.

In 2012, as many as 46 vessels sailed through the NSR (25 eastbound and 21 westbound) compared with 34 voyages in 2011 and only four in 2010. Nearly 1.30 million tonnes of cargo was shipped through the NSR in 2012 compared with over 800,000 tonnes in 2011. As many as 26 tankers (18, west-east and 8 east-west) carried nearly 900,000 tonnes of oil and gas and other petroleum products. An LNG tanker sailing from Hammerfest in Norway to Tobata in Japan covered more than 6000 miles through the NSR, saving nearly twenty days. It is believed that by 2015, the Arctic will be ice-free during the summer, allowing more ships to sail across. Shipping companies are developing strategies for exploiting the new route. Importantly, in 2006, a total of 262 ice-class ships were being built, and an additional 234 ice-strengthened ships were scheduled for delivery by 2012-13.

Resources in the Arctic Region

The Arctic's energy and mineral resources are geographically exploitable. The 2008 US Geological Survey report notes that over 70 per cent of the undiscovered Arctic oil resources are in five areas – Alaska, Amerasia Basin, East Greenland Rift Basins, East Barents Basins, and West Greenland-East Canada. More than 70 per cent of the undiscovered natural gas is in the West Siberian Basin, the East Barents Basins, and Arctic Alaska. Nearly 84 per cent of the undiscovered oil and gas occurs offshore. This totals up to nearly 90 billion barrels of oil, 1669 trillion cubic feet of natural gas, and 44 billion barrels of natural gas liquids. The Russian Arctic region may hold up to 20 per cent of the world's hydrocarbon deposits; the Alaskan Arctic nearly 13 per cent of the world's undiscovered oil and 23 per cent of its undiscovered natural gas. However, resource exploitation challenges remain.

Politico-Strategic developments

During the Cold War, the US-led Western alliance deployed a variety of

surveillance systems to track Soviet military and civilian vessels transiting through the Greenland-Iceland-United Kingdom gap that served as a chokepoint in the Northern Atlantic Ocean. The end of the Cold War resulted in the demilitarization of the Arctic partly due to the decline in Russia's military capability. In recent times, the Arctic littoral states have formulated strategies pivoting on boundaries, resources, routes and military capability.

In 2007, Russia startled the world by positioning its national flag on the seabed at the North Pole and announcing that the region was connected to Russia's continental shelf and claiming 1.2 million sq km area. Sharply reacting to this development, Canadian Prime Minister Stephen Harper announced plans to enhance his country's military presence in the Arctic region to assert sovereignty over the Northwest Passage. The US strategy document, titled "National Security Presidential Directive and Homeland Security Presidential Directive", released in January 2009, highlights the importance that country accords to developments in the Arctic.

In 2006, the Norwegian government announced its High North Strategy aimed at sustainable growth and development of the Arctic region, pivoting on three principles, i.e. presence, activity and knowledge. Finland announced its Arctic strategy in 2010, laying down that country's Arctic policy objectives and setting out directions how the government should conduct its external relations. The document highlights issues of security, environment, economy, infrastructure and the indigenous peoples in the Arctic. Although Sweden's Foreign Policy Statement 2010 is silent on the issue of the Arctic, it is concerned about the changing politico-military landscape in the region. It also seeks security partnerships with the other Nordic countries on issues of climate change and security.

Greenland is a semi-autonomous territory in the possession of Denmark. For the last three decades it has been governed under the "Home Rule" arrangement, wherein Copenhagen manages the strategic affairs, including the provision of defence of the island and protection of its exclusive economic zone (EEZ). In recent times, Greenland's strategic significance has moved higher with the discovery of hydrocarbons.

NATO's Article 5 defines the Arctic Circle as an area of its operations. Four of the five Arctic coastal states are members of NATO. Russia is concerned about any NATO initiative for the Arctic and has cautioned that its presence in the region could jeopardize regional security.

Asian Interest

There is a growing Asian interest in the Arctic region. China, Japan and South Korea are actively engaged in strategizing the usage of the NSR. They are keen to become permanent observers in the Arctic Council and broaden their understanding of the dynamics of the region. They lack Arctic naval capability but would in due course be inclined to develop it, keeping in view that the Arctic sea lanes will be vulnerable to a variety of political and strategic uncertainties.

The Chinese government has allocated significant scientific, technological and financial resources for conducting Arctic research, assess untapped energy resources, explore the possibility of transit through the NSR and formulate policies for its engagement in the dynamics concerning the Arctic region. Chinese scholars have urged the government to play a proactive role in Arctic affairs, but the official view is that "active overtures would cause alarm in other countries due to China's size and status as a rising global power". A Chinese articulation, that in the Arctic region even non-Arctic states must enjoy freedom of navigation, merits attention. There are reports that the PLA Navy may be planning to develop capability for launching missiles from under the ice cap using its SSBNs that are under construction.

China currently operates ice-breaker *Xuelong*, which was built in Ukraine in 1993. It has announced plans to build another ice-breaker as a joint venture between the Finland-based Aker Arctic Technology Inc. and the Chinese Arctic and Antarctic Administration (CAA), under the State Oceanic Administration (SOA) and the Polar Research Institute of China to be ready for operations in 2014. This 8000-tonne dwt vessel will have endurance of 20,000 nautical miles and will be capable of navigation through 1.5 metres of ice. The Chinese believe that the construction of the modern polar research vessel is "a giant step toward the goal of building a completely domestic icebreaker". Chinese shipyards are also building ice-class commercial vessels for international shipping companies.

Japan has set up a research station at Ny-Ålesund. Its research focus is on meteorology, glaciology, oceanography, terrestrial biology, and upper atmosphere physics. It has participated in the International Northern Sea Route Programme (INSROP) in partnership with the Fridtjof Nansen Institute of Norway and the Central Marine Research & Design Institute of Russia. Japan has also initiated the Japan Northern Sea Route Programme (JANSROP) research programme under which "a transportation system to bring natural resources from the Russian Far East to Japan via the NSR and on the safety

of navigation and conservation of the marine environment in the Sea of Okhotsk" is being developed.

South Korea is actively engaged in the Arctic and has established the Korean Arctic Science Council (KASCO). In 2002 RoK joined the International Arctic Science Committee (IASC) and set up the Arctic station *Dasan* at Ny-Alesund. Korean scientists have carried out research in atmospheric sciences and biology. RoK has also commissioned the research ice-breaker *Araon*. Korea and Canada have recently signed a memorandum of understanding (MoU) for cooperation in Arctic research. Korea Polar Research Institute (KOPRI) and the Earth Sciences Sector group of Natural Resources, Canada have agreed to partner and conduct research on geo-science, mapping and remote sensing applications and environmental geology. RoK has also announced plans to invest KRW 3.6 trillion (US$3.1 billion) by 2020 to strengthen research for new offshore industries and the Arctic shipping sector.

Arctic Council

The Arctic Council is an inter-governmental group of the eight Arctic states – Canada, Denmark (Greenland and Faroe Islands), Finland, Iceland, Norway, Russia, Sweden, the US – and the Arctic indigenous communities and other Arctic inhabitants. It was established in 1996 and promotes *inter se* cooperation, coordination and interaction on common Arctic issues concerning them, in particular issues of sustainable development and environmental protection. It has no regulatory powers for compliance and enforcement mechanisms. It meets biannually and its chairmanship rotates every two years.

Some Council members appear to be warming up to the idea of inviting more countries to join them. In his speech titled "Norwegian Arctic and High North Policy: Opportunities and Challenges" at the Stiftung Wissenschaft und Politik, Berlin, delivered in 2010, the Norwegian Foreign Minister observed that the character of the Arctic region is global and "the Arctic is and must remain an open region". Further, there was a need to address the "legitimate interests of non-Arctic states" such as China, Japan, India and South Korea. Likewise, Erik Lorenzen, Denmark's Ambassador to Canada, has noted that several countries (China, Argentina, France, Italy and the European Union) want permanent observer status on the Council. In his view, "giving other nations some kind of formal observer status on the Arctic Council may be the best way to ensure its continuing influence – allowing other countries inside the tent may be the best way to keep it standing."

Non-Arctic states believe that their participation as observers in the Council can help them play a constructive role in the debate and discussions related to the Arctic. The desire to exploit hydrocarbons, marine living resources and seabed minerals in the Arctic is also high on their agenda. They are aware at the same time that a large proportion of these resources lies under the national jurisdiction of the Arctic states and can only be exploited through international cooperation. Further, there are several boundary disputes among the Arctic states and this may preclude international joint ventures.

The Arctic Council met in 2009 at Warsaw to discuss an ad hoc observer state's engagement in its activities. It was decided that uniform criteria for obtaining observer status should be identified. At a meeting on 30 March 2010, the Foreign Ministers from the member-countries discussed issues relating to shipping regulations, maritime boundaries, search-and-rescue responsibilities, and negotiating territorial disputes in the Beaufort Sea and the Barents Sea. It was hoped that the Council would consider positively at its meeting on 12 May 2011 the proposal of membership of non-Arctic states; however, the members were anxious over the growing desire of non-Arctic states to enjoy the new-found booty in the Arctic.

It was agreed that non-Arctic states could be included as a permanent observer provided they "give up all pretensions that the region will be a 'global common". The Russian delegation noted: "Lately, fashion has emerged in the Arctic due largely to the economic possibilities it offers … many countries that have no relation to the Arctic, now have the desire to get a piece of the Arctic pie.… If given the green light early in the Council one hundred observers will require more and more rights, and then want to convert the Arctic into a heritage of humanity." The delegation made it clear that "Russia wants to avoid this situation" and was of the view that "most Arctic countries share Russia's position". Similarly, the Canadian delegation argued: "Remember the failure of the climate conference in Copenhagen. The more members of the club, the harder it is to agree. And in the Arctic there are problems, particularly environmental, that must be addressed urgently." However, there is also a view that the Arctic Council should be inclusive to prevent misperceptions of it being an exclusive club that may result in non-Arctic states taking no notice of the rules and codes of conduct for the Arctic, causing unwarranted frictions.

India's Polar Programme

India's interest in polar sciences began in 1981 with its Antarctic programme and the National Centre for Antarctic & Ocean Research (NCAOR) was

established at Goa. In 1983, a permanent research station called *Dakshin Gangotri* was set up. The second station, *Maitri*, was built in 1989. The third permanent station, *Bharati*, was made operational in 2012. After its successes in scientific research in the Antarctic, India began to look at the Arctic region and has since then watched with interest the evolving climate-change-induced developments in the region.

India's engagement in the Arctic is also based on the "Treaty concerning the Archipelago of Spitsbergen" or the "Svalbard Treaty", which it signed on 9 February 1920. At that time India was under the colonial rule.

On 30 July 2007, India established a scientific research station, *Himadri,* at Ny Alesund, Spitsbergen, about 1200 km from the North Pole. This facility undertakes scientific research with special emphasis on climate change, geology and weather. Currently India's interest in the Arctic is limited to scientific studies. During April–May 2011, an Indian team from the National Institute of Oceanography (NIO) studied the physical, chemical and biological parameters of the Kongsforden Fjord located close to *Himadri*. The study concluded that the Arctic is fast losing its capability to be the "global carbon sink" and would drastically reduce in the future due to the quickly receding glacier cover.

India has drawn plans to continue investing in scientific research in the Arctic. The draft approach paper for the 12th Five Year Plan (2012–2017) of the Earth System Science Organization of the Ministry of Earth Sciences notes that Indian scientists would focus on the study of the modern biogeochemical cycling in the snow packs and sea ice to identify the possible triggers in the seemingly less understood but crucial linkage in the controlling mechanisms in the response of the ice cover to the warming trend. The other areas of research would be the deployment of a multi-sensor ocean-atmosphere mooring in Kongsfjorden, Svalbard for long-term climate variability studies. India also plans to publish a composite geological map of the Arctic.

India's Naval Experience in the Arctic

India is the first Asian country to have obtained some kind of Arctic naval experience. It began in 2011 with the Talwar-class (Krivak III) frigate, INS *Teg* undergoing sea trials in Arctic-like sea conditions. Although the sea trials were not necessarily a compelling requirement, they provided an opportunity to develop some sort of capability to operate in extreme ice conditions in the Baltic Sea. This also tested the construction of the ship and the ability of the crew to operate in extreme conditions.

The second opportunity emerged in the form of INS *Chakra*, a nuclear submarine acquired from Russia on a ten-year lease. Apparently, the submarine encountered severe ice conditions and snowstorms during trials and the crew successfully negotiated these.

In the third engagement, India's aircraft carrier INS *Vikramaditya* had been programmed to complete the pre-delivery sea trials in the White Sea before the ice melted during the summer of 2012. The trials were unsuccessful, resulting in the ship having to remain in the dockyard and wait for the summer of 2013. It remains to be seen if the Indian Navy is able to capitalize this opportunity and develop "sea legs".

Indian Narrative on the Arctic

There is a view that Polar Regions are "global commons" and the international efforts should be to preserve their ecology. It is also believed that if India joins the Arctic Council, it would result in accepting the rights of the Arctic littorals over the Arctic Ocean. The other narrative endorses the idea that India should build a good understanding of the evolving politico-legal-strategic developments in the Arctic region and formulate a strategy to exploit the Arctic resources. Another view argues that India being a strong advocate of nuclear disarmament, it should advocate for a demilitarized and nuclear-free Arctic. In essence, the Indian narrative on the Arctic region is still evolving.

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Push for a 'Global Commons' Theory

Kishore Kumar*

Introduction

Scientific developments and, consequently, economic growth have resulted from humankind pushing the frontiers of knowledge. Be it in the realm of marine / deep Sea, nuclear energy, microbiology and biotechnology, space or polar science, it was the spirit of adventure and quest for knowledge that broke new ground. Sometimes, one incident leads to another and a major discovery is made. For example, in the early 1960s, a Soviet nuclear submarine sank off the North American coast in the deep sea of the Clarion-Clipperton transform. This was recovered by the USA secretly under seabed survey, using Hughe's *Glomar Explorer* which had a 82-metre-long bay that could be opened and closed in its hull. This exercise led to the finding of high-grade polymetallic nodules, containing strategic metals like copper, cobalt, nickel and manganese. In the meeting of the UN General Assembly (1967), Arvid Pardo of Malta focused international attention on the vast potential of resources on the seabed. The events following this discovery form a watershed in history when laws of the sea were evolved to highlight the "common heritage of mankind". However, this journey has been a difficult one from the point of view of India and the developing world. International negotiations for access to such new opportunities have witnessed, as we shall argue later, efforts to block "outsiders" from entering the domains of frontier knowledge and technologies.

In the realm of the Arctic, this is an occasion to remember the contribution of the Norwegian explorer Roald Amundsen. He was the first to traverse the North-West Passage (1903-1906), the North-East Passage (1918-1920), now called the Northern Route, as also to lead the first expedition to reach the North Pole (1926). He learnt from the Netsilk people Arctic survival skills, use of sled dogs, and to wear animal skins in lieu of heavy woollen parkas. He also faced a number of accidents – broke his arms and also was attacked by polar bears. He disappeared in June 1928 when he embarked on a search mission for survivors of an air crash in the vast snow. He and other explorers collected valuable scientific data, some of which were also lost in the ill-fated journey. However, the expeditions of

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Amundsen and his colleagues opened the possibilities in the Arctic region, culminating in the current conundrum on territorial and resource claims in the region, as well as the northern passage between the Atlantic and the Pacific.

The Region

The Arctic is a white desert, the largest and least fragmented of the inhabited regions in the world. It contains vast areas of fjords (narrow strip of sea between high cliffs), tundra (large frozen land with no vegetation), as well as jagged peaks, frozen seas, glaciers, and icebergs. The glacier fingers extend down the mountain ridges in Norway, the Urals, Kolyma, Alaska, Yukon and Bafin islands, reaching below the Arctic/Polar Circle. The 1500 km of polar ice extends south to three exits: the narrow exit west of Greenland into North Atlantic; through the 500-km-wide strait between Greenland and Svalbard; and through the 70-km Bering Strait between Chukotka and Alaska into the Bering Sea onward to the Pacific Ocean. We shall discuss later that the melting of ice in the Arctic Sea provides the all-important North-West and North-East passages for ships and super-tankers, yielding huge advantages in terms of shipping time and fuel consumed.

Unlike the Antarctic continent, the Arctic has human settlements with adequate resource use in terms of fish/mammals and firewood. The indigenous population, the Inuits, have the ability to predict and make use of patterns of species and their habitats – salmon runs, caribou migration, grazing areas, etc. – which are essential to develop villages. as also Reindeer husbandry. The introduction of new technologies over the years – snow machines replacing dog teams and reindeer, rifles/shotguns for bows and arrows, and outboard motors for paddle and wind-driven boats – while increasing their hunting efficiency, has also put a strain on resources. This, in turn, threatens the Arctic biodiversity: many species are now either depleted or nearly extinct.

Governments' quest for professional hunting for the market, herding and husbandry management for reindeer, etc., has also led to introduction of government management systems in Alaska, Canada, Greenland and other regions of the Arctic. Norway conducts commercial sealing and whaling for the domestic market and also exports seal products. Greenland sells whale and seal meat domestically and exports seal skin. Canada processes caribou and musk-ox meat for both domestic and export markets.

Why is the Arctic Important?

The Arctic has a significant influence on global climate patterns. Unlike the tropical and temperate areas of the world, it receives sunlight from a very low angle even in the summer. Much of the energy is reflected by ice and snow cover but is blocked by frequent cloud cover. As heat flows from warmer to cooler areas, there is flow of energy from equatorial regions to the poles, carried by currents of air and water. Thus, more energy is radiated from the Arctic region than it receives. This basic flow pattern causes global oceanic and atmospheric circulation which, in turn, determines regional and local climate.

While snow and ice reflect light in order to keep the surface relatively cool, both ground and open water absorb light, thus increasing the local temperature. These processes are significant for the net heat balance of the Earth — scientists have also taken cognisance of the significance of the Arctic ecosystem for the Indian subcontinent. The hypothesis that there exists a tele-connection between the northern polar region and the intensity of Indian monsoons is being studied by meteorological scientists.

Most important is the role of the polar sea ice in global climate change. It has been estimated that during the winter the Arctic ice pack grows to the size of the United States, and half of it disappears in the summer. In the process, a large amount of water is put into or pulled out of the ocean and the atmosphere, causing a worldwide effect. During the International Geophysical Year (1957-58), American and Soviet scientists spent the entire winter on ice-covered islands of the Arctic, measuring depth, salinity, temperature and other factors to model the extreme variability of sea ice; as well as trying to understand its connection with climate change in recent years. In the late 1990s, the Canadian icebreaker ship *Des Groseilliers* was used to conduct studies on a multinational project called Surface Heat Budget of the Arctic (SHEBA). The US and Japanese governments also collaborated on a study of heat flow among water, ice and atmosphere of the northernmost Arctic region, and to document how the ice, clouds, snow and the ocean interact and exchange energy.

These data are currently being integrated and analysed. Some surprises have also been reported. One relates to the salinity of water. When the scientists arrived at the Arctic ice pack in October 1997, they discovered that the water was much fresher than it had been twenty years earlier. They concluded that melting of the ice pack during the summer of 1997 caused the water to be much less salty. Such changes can have serious consequences for marine life

as well as ocean water circulation and its interaction with the atmosphere.

In recent years, global warming and consequent climate change effects have been seen to a much larger extent in the Arctic region. Its average temperature is rising twice as fast as elsewhere in the world, thereby leading to melting and shrinking sea ice in extent and thickness. Over the last three decades, satellite data have documented the summer Arctic sea ice cover decrease by over 13 per cent per decade. In a recent study on ice export through Fram Strait, the large gateway between Greenland and Svalbard, scientists have focussed on natural and anthropogenic factors contributing to the loss of ice cover. In recent years, this ice export has been to the extent of about 200,000 sq km which is much higher than earlier periods. The models used by researchers – six current models that provide twenty-four different simulations – have reproduced a realistic seasonal cycle of ice export, more floating in the winter than in the summer. Apart from external forces like carbon dioxide concentration or changes in incoming sunlight, these flows are controlled by internal climate variabilities like wind pattern over the Arctic.

Though the phenomenon of ice-shrinkage is being observed, more Scientific Studies are being carried out in research stations of various nations to find out the linkages between the factors mentioned above. What is of a much larger significance is that melting of ice has brought about a change in the geopolitical realities of the Arctic, leading to a scramble for newly discovered resources and convenient sea routes.

The Indian Initiative

The progress of polar research in Antarctica since 1982 fuelled the Indian quest for the study of the Arctic ecosystem which was undergoing significant changes in recent decades. The initiation of aerosol and atmospheric electrical measurements at the Norwegian Polar Institute (NPI), as well as the hypothesis that Arctic microbes are the main drivers of biotechnology, led to the development of a science plan for Indian activities in the Arctic region. A five-member team of Indian scientists visited the International Arctic research facilities at Ny-Alesund on the Spitzbergen island in the Svalbard archipelago of Norway in 2007. The project was meant to study the realm of atmospheric science, microbiology, Earth science and glaciology. It was organized, coordinated and executed by the Ministry of Earth Sciences (MoES) under the aegis of the Research and Development Wing of the National Centre for Antarctic and Ocean Research (NCAOR), Goa.

NCAOR and NPI (Norway) signed a memorandum of understanding (MoU) on collaborative scientific research and sustained multi-institutional / multi-disciplinary scientific studies at Ny-Alesund. These steps culminated in India becoming a full-fledged member of the Ny-Alesund Science Managers Committee (NySMAC), with the Indian activities to be coordinated and executed by the NCAOR. The success of the Indian research activities in 2007-2008 led to the establishment of the Indian research station *Himadri* at Ny-Alesund on Svalbard (Spitzbergen) on 1 July 2008. One of the buildings available at Ny-Alesund, an abandoned school building for the children of coalminers was refurbished to serve as research station, providing an extensive field and laboratory support for scientific research.

Apart from the NCAOR, major institutes involved in the Indian Arctic research programme are:

a) Indian Institute of Tropical Meteorology, Pune,

b) Centre for Cellular and Molecular Biology, Hyderabad,

c) Birbal Sahni Institute of Palaeobotany, Lucknow,

d) Lucknow University, and,

e) Other scientific institutes and universities

The research projects initiated by India may be the first steps in that direction, but they are significant in generating the climatic history patterns, including the study of increase in aerosol concentration with wind speed, distribution of pollen spores in growing of vegetation, and changes in surface sediments. These might look to be micro-level studies, but will certainly help unravel a number of mysteries about the Arctic region and their impact on the rest of the world.

New Opportunities

While climatologists are getting increasingly worried about the alarming rate of Arctic ice disappearance, the northern nations are filled with glee about substantial economic gains from new sources of minerals and hydrocarbons, as well as about the northern shipping routes between the Atlantic and the Pacific Oceans. For the first time in 2007, a large part of the Arctic Sea became ice-free, providing major geopolitical advantage in shipping and trade.

It is worth noting in this context that significant amount of exploration and development work had been carried out in the twentieth century for minerals in the Arctic. For instance, gold was found in Klondike, Alaska and

Chukotka; non-ferrous metals at the mining complexes of Norilsk and Kola peninsula; coalmines on Svalbard; lead-zinc mines in Arctic Canada and Alaska; cryolite in Greenland; and diamonds in Canada's north-west territories. There also has been oil and gas development in vast reserves in Alaska, Canada and Russia, while exploration programmes have been carried out in the Barents Sea and Greenland. According to reliable estimates, the Arctic region holds about 22 per cent of the world's remaining supplies of oil, and much more of natural gas. The US Geological Survey assessment of energy resources in the Arctic has identified the largest potential of oil reserves in the basin off the northern coast of Alaska, the Amerasia basin north of Canada, and east and west Greenland Rift Basin. The Arctic Circle regions of Russia, Norway, Finland and Sweden have large deposits of minerals, particularly iron ore. The infrastructure for oil development, like drilling platforms, processing plants and pipelines hundreds of kilometres in length, extends through large stretches of the Arctic landscape. Due to the new climatological developments, nations have chalked out ambitious strategies for the exploration and exploitation of the "high north".

Meanwhile, a deep-water sea route has opened up in the North – the North-West Passage, mainly along Canada's Arctic coast, linking East Asia with North America; the North-East Passage along Russia's Arctic shoreline provides an alternative sea route between Asia and North America and Europe. The North-West Passage between Yokohama and Rotterdam is about 4000 km shorter than the existing route through the Suez. Similarly, the Arctic route between Rotterdam and San Francisco is twelve days shorter than the one passing through the Panama Canal. As the Arctic passage traverses very deep waters, it will facilitate the passage of large container ships and super-tankers; without the constraints of size and volume restrictions imposed in much narrower and shallower passageways of the Suez and Panama Canals. In addition, it also saves shipping freight due to much lower fuel consumption.

Territorial Claims

The coastal states along the Arctic are the United States, Canada, Russia, Norway, and Denmark through its jurisdiction over Greenland. Russia has already staked its claim to the 1250-mile underwater Lomonosov Ridge in the UN Commission on Limitation of Continental Shelf (CLCS). The argument forwarded by them is that the ridge is an extension of the Siberian landmass, with UNCLOS III providing that states can extend their jurisdiction to 350

nm by submitting geological evidence to the CLCS within ten years of ratifying UNCLOS. In order to symbolically bolster their claim, a Russian science expedition used a submarine to plant a flag in the Arctic seabed under the North Pole in 2007. According to a Russian Security Council report, Moscow is set to become the biggest player in the Arctic by making it the primary resource base for the country. In addition, Russia resolved its longstanding territorial dispute with Norway in 2010, delimiting their maritime boundary. This has opened up the possibilities of oil exploration and exploitation; as their national oil company, Rosneft, is collaborating with the oil multinational BP for drilling operations in the Russian Arctic zone.

The United States has sought an agreement with Canada on the Alaska-Yukon sea border, the location of the lucrative Alaska basin. However, their efforts to extend claims to the Arctic continental shelf are limited by the fact that the US has not yet ratified UNCLOS III, and is thus excluded from the legal processes the other Arctic states are engaged in. The lure of the favourable sea route has driven the US to press for the North-West Passage to be classified as international waters. Canada has the geographical advantage of large claims on the Arctic shelf, but its argument that the Lomonosov Ridge is an underwater extension of Ellesmere Island has the potential to conflict with the claims of Russia and Denmark. Also, the North-West Passage would pass between the islands of Canada's Arctic Archipelago, and thus would be liable to be treated as internal Canadian waters, a stance opposed by the United States and Russia.

Among the Scandinavian countries, Denmark has staked claim to the North Pole itself on the basis of the Lomonosov Ridge being an extension of the Greenland landmass. It has conflict with Canada which is also making claims to the Arctic archipelago coast of Greenland. Denmark has already occupied Hans Island, a small piece of contested land between Ellesmere Island and the north-western coast of Greenland. Norway has made claims that conflict with that of Russia over their mutual border in the Barents Sea, home to an estimated 11 billion barrels of oil. Apart from bilateral negotiations with Russia, Norway has submitted geological data to the CLCS to extend its continental shelf to about 600 km south of the North Pole. It needs to be noted that almost all the Arctic-related scientific research stations are located on Norwegian soil.

China has also been actively seeking to find space in the Arctic ownership negotiations. Taking advantage of the global financial crisis (2008), it coaxed Iceland to cede to it a financial lifeline in the Arctic region. In 2001, a Chinese billionaire, Huang Nubo, purchased approximately 120 sq miles of land in

northern Iceland to be developed for tourism. Iceland later cancelled this deal on suspicion that the land would be developed into an Arctic port to further Chinese shipping interests. China has appealed the ruling for conversion of the sale into a lease agreement. It has also approached Canada and Denmark for observer status in the Arctic Council, with the offer of an access to China's booming economy. It would not be out of place to cite Yin Zhuo, a retired Vice Admiral of Chinese PLA (Navy), who said in March 2010: "The Arctic belongs to all the people around the world as no nation has sovereignty over it."

The Regime

The Arctic region is not subject to any international treaty system, but the Arctic Council has emerged as the primary institution to facilitate the business of the Arctic nations – Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden and the United States. It has already helped reach some agreements, including international search-and-rescue cooperation procedures, along with the establishment of a permanent secretariat in Norway. The Council has streamlined the process for granting non-Arctic states permanent observer status in the Council. It has been argued by informed sources that this is an attempt to appease the European Union and China in the light of the current global economic scenario.

But there is a catch here: a primary criterion for becoming a permanent observer in the Arctic Council is to yield to the Arctic countries sovereignty over their corresponding "territories" in the region. This would imply non-Arctic countries giving up claims that the Arctic region is a global common, ruling out the role of any international agency in its management. The Arctic nations may be having territorial disputes among themselves, but have the common objective of keeping out non-Arctic states.

The Indian Position

The establishment of the research station *Himadri* has propelled India to the forefront of polar research in the world. Indian scientific research in the region is currently nascent, but could have a growing role in contributing to understanding the climate change impacts, monsoonal tele-connections, microbiology, as well as problems of pollution in the Arctic region. The region may seem distant, but there is growing recognition that far-reaching changes in this ecologically pristine region will have long-term impacts on India and

the world. India cannot remain immune to these developments.

Like earlier developments in frontier areas like nuclear and deep-sea technologies, the Arctic regime is also seeking to deny access to presumed outsiders. There are voices within the country asking to join the international scramble for Arctic resources via membership of the Arctic Council with permanent observer status. This could imply India accepting the exclusive club of the Arctic and conceding their right to rampant economic greed and consequent degradation of the region, with long-term impacts. Instead, India needs to use its growing international economic and technological status to push for the global commons theory, for which it will receive widespread international support and acclaim.

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India and the 'Age of the Arctic'

Uttam Kumar Sinha*

The Arctic is changing rapidly. The unprecedented changes have created an imagery of a bountiful region with high political stakes and commercial gain. The great expectation, excitement and accompanying nervousness reminds me of an article written in *Foreign Policy* in 1985 (in the throes of the cold war) by Oran Young that said, "It is hardly an exaggeration to say that the world is entering an age of the Arctic, an era in which those concerned with international peace and security will urgently need to know much more about the region and in which policymakers in the Arctic rim states will become increasingly concerned with Arctic affairs." The icy waters of the Arctic were then primarily a strategic theatre, where the US and the Soviet Union (now Russia) were (and are) only 91 km apart at the Bering Strait. Three decades hence, the world has truly entered an "age of the Arctic" but an Arctic that is increasingly ice-free during summer. This has brought on a new set of strategic significance especially with potential exploitable oil and gas resources. States would like to convert the existing knowledge on the Arctic into political potential.

The Arctic has seen a dramatic turnaround from being a destination for research expeditions and a desolate area for missile testing to a hotspot where competition is unavoidable but where cooperation is equally desirable. It is a bellwether that presages future happenings that include the rate at which the planet is warming and causing ice melt; the potential increase in sea levels as a result of the thawing of the Greenland ice; and the overall impact on the weather patterns in the northern hemisphere's mid-latitudes.

With satellite images pointing to the fact that the summer sea-ice loss has been significantly higher in 2012 than earlier calculated, one can either be worried with the ominous trends or pleased with the profitable prospects. Scientific findings and climate modelling further indicate that by mid-century the Arctic could be ice-free in the summer. In the climatology lexicon, it is called Arctic amplification: the shrinking of the ice reduces the reflection of sunlight and also increases the absorption of heat as the darker water gets exposed. Because of the meltdown, the circumpolar compactness and continuum of the Arctic has given way to an extremely active geopolitical

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space. The undisturbed ecological qualities that gave the Arctic its physical stability are now being disturbed by the scramble for resources – "drill, baby, drill". It clearly seems that the commercial priorities of fishing, gains from shorter shipping routes and the need for energy have made the Arctic a hot destination – a "gold rush and land grab" – creating an imagery of chaos.

The Arctic in the current century will remain high on the radar and keep countries, particularly those within the rim and some beyond, honest in their engagement. Inevitably, competition and cooperation will emerge along with positioning and posturing. Three reasons for Arctic attention may be highlighted:

First, the Arctic will continue to remain a large geo-strategic tract. Whether it is new resource finds or emerging transport routes, the Arctic's strategic value will only amplify. Tension and high politics will always lurk. The race for resources, as history has shown, leads to geopolitical competition and contestation, while the opening of transportation routes tends to foster cooperation. Interestingly, China is already articulating a "commons" position, that is, no nation has sovereignty over the Arctic and the resources there are for all to exploit and use. It is a clever spin on that country's interest in the Arctic. The five Arctic littoral states – Norway, USA, Canada, Denmark and Russia (the A5) – would quite clearly not agree to such views. The Arctic's political temperature may heat up in different ways in spite of the fact that Russia and Norway have agreed to and ratified the delimitation line in July 2011 after forty years of negotiation. The immediate reason for things heating up could be the discussion on (i) who shall extract the oil when the ice thins and possibly disappears; (ii) how will the new marine delimitation lines be drawn; (iii) who will control the new sea passage; and maybe at some stage a bigger question on (iv) who owns the Arctic.

In a sense, one can question the robustness of institutional regimes in the Arctic. Conflicting continental shelf claims and consequent tension cannot be discounted. Also, the difference in opinion between the US and Canada on the issue of international waters and internal waters will be irksome. Russia, one can argue, will be a key player in the Arctic. The international system is essentially about maintaining peace through balancing power. Balance of power is almost indispensable in diplomacy and one of its ardent exponents is Russia. With reference to the Arctic, where great-power politics will be potentially high and competition over future stewardship may lead to standoffs, Russia will be a critical player and a counterweight to any balance of power tilting westward. It is also possible that a resurgent Russia will find the Arctic region a perfect ground to proclaim its power status. Interestingly, the odd country out in the A5 is Russia. The others are NATO members with longstanding

Western liberal democracies and thus are natural allies. Yet Russia seems to be in a position to balance the unfavourable equation. It has greater cooperation with Norway, with which it shares a border, over fishing and hydroelectricity and with Canada it cooperates on icebreakers.

Sino-Russian relations and possible changes in Russian foreign policy orientation due to the rise of China will also be important for understanding the wider strategic framework in the Arctic. If Moscow decides to build closer ties with the West consequent to China's rise, this would counterbalance China's interest in the Arctic. If, on the other hand, Beijing invests towards closer relationship with Moscow, it could advance Chinese engagement in the Arctic, posing security challenges to Norwegian interests in the region.

The second reason for attention to the Arctic is that it is a semi-enclosed ocean surrounded by land and, like all high seas, is governed by the law of the sea (UNCLOS). The Antarctic, a geographical contrast, is a landmass surrounded by an ocean. Further, the Arctic is territorial proprietorship of the A5 nations. Unlike the Antarctic, which is governed by the 1959 Treaty that bans territorial claims, the Arctic region is sectoral. The only legal framework governing it before the 1982 UNCLOS was the national laws of the A5 and the 1920 Paris Treaty on the Status of Spitsbergen (Svalbard Treaty). In 1982, the Soviet Union signed UNCLOS, which gives coastal states exclusive rights to develop natural resources in a 200-nautical mile zone extending from the border of their territorial waters (12 miles from the coast). So, clearly, there are norms and regulations. However, differences may emerge on the interpretation of the existing laws because of the geo-physical changes in the Arctic. UNCLOS, the most important governance structure, has established principles particularly on the limits over national jurisdiction. When UNCLOS was being drafted, the Arctic ice melt was not factored in, yet the convention is flexible enough to allow for new physical changes and developments, as Article 234 Section 8 on "Ice-covered areas" explains. UNCLOS will remain the benchmark for settling future claims in the Arctic. Four Arctic states – but not the US – are parties to UNCLOS; all A5 agree that the legal regime contained in UNCLOS applies to the Arctic as well. Obama's administration may take up the ratification of UNCLOS as the US eyes the Arctic resources.

The role of Asian states, in particular China's position on the interpretation of UNCLOS, will likely impact the governance structure in the Arctic. China ratified the convention in 1996 but hesitates – as for example in the case of the Spratly islands and Scarborough – to make it a dispute settlement

mechanism. The Chinese claim to these islands is based on historical records whereas UNCLOS requires countries to surrender such claims and abide by either the "territorial waters" (waters under the jurisdiction of the state, traditionally three miles) or EEZ (exclusive economic zone having a 200-nautical mile limit). Laws regularly clash with sovereignty. The Arctic too may witness claims and counterclaims.

With the Arctic meltdown, new shipping routes will open up. The rights of states for various types of passage (innocent, transit, archipelagic or free) are set out in UNCLOS. The practical modalities and implementations have to be worked out, which could mostly be bilateral, but would need to be applied uniformly to other states as well. As for resource finds, the landmass underneath the Arctic is almost entirely the continental margins of the A5. Of these, Russia and Norway have already made their submissions to the Commission on the Limits of the Continental Shelf and have received recommendations for delineation of the outer limits. Canada and Denmark are expected to make their submissions in 2013.

The third point about the Arctic is the resources. The Arctic, it is said, holds the largest remaining untapped gas reserves and some of the largest undeveloped oil reserves, making it the final frontier for energy development. These potential reserves mostly lie offshore, in the Arctic's shallow shelf. But will the Arctic's oil and gas finds be able to take care of the world's energy needs? Many known reserves in the rest of the world are currently not exploited because of their inaccessibility – short productive period and low temperatures. Any oil and gas development in the Arctic will require building massive infrastructure through areas that are ecologically sensitive.

Russia's Shtokman field, which lies 550 km from Murmansk in the Barents Sea in the Arctic, is estimated to contain 3.8 trillion cubic metres of gas. Much of Russia's gas production already comes from the Yamal peninsula and the northern Arkhangelsk region in the Arctic. But these resources are not necessarily leverage. Russia would need Western technology and heavy investment to develop the potential fields before it can sell their energy resources to the Western markets. Currently, however, given the global economic downturn, extraction of oil and gas are low key. This makes the Arctic more an active shipping route than an oil and gas production zone.

The other resources in the Arctic refer to the vast mineral wealth. Russia's arctic region, probably the most developed, has vast deposits of nickel, copper, coal, gold, uranium, tungsten, and diamonds.

India's Interest and Role in the Arctic

In this backdrop of rapid changes – geo-physical, geo-political and geo-economic – what should be India's perspective on the Arctic? Probably as an aside, but not completely out of context, research on Aryan genealogy informs that the Arctic is not really distant to India. Bal Gangadhar Tilak in his book *The Arctic Home in the Vedas,* published in 1903, convincingly argues, and documents through Vedic hymns and passages in the Avesta, that the North Pole was the home of Aryans in the pre-glacial period around 8000 BCE.

In recent times, India has had a long scientific association with the Arctic region. Much of the India-Norwegian dialogue has focused on Polar research. India's National Centre for Antarctic and Ocean Research (under the Ministry of Earth Sciences), based in Goa, and the Norwegian Polar Institute, based in Tromso, have jointly conducted research on the effects of climate change in the Arctic. (Incidentally, the Arctic is often referred to as Nature's laboratory.) The two countries have also been collaborating in the Antarctic and in Svalbard of Norway. India signed the Svalbard Treaty (1920) in 1923 to establish a research station in that country. The Arctic research station *Himadri* at Nye-Alesund was set up in 2008 focusing on glaciological studies, palaeo-climatology, sea-ice ecosystem and geological mapping.

The Arctic is an antithesis: there are strong and important economic interests in the region, which contrast with the need to protect it against climate change. The contrapuntal strains definitively indicate the need for further research. For India, scientific evidence is important in framing climate policy and climate diplomacy. India may be physically far from the Arctic region: but its ice melt puts India's citizens at risk. Some of the questions that India needs to investigate further are: (i) What will be the impact of the release of vast amounts of methane when the Arctic ice melts? (ii) Will it impact the stability of the monsoon system on which billions of people depend in South and South-East Asia?

Of late, India has initiated some policies beyond the scientific realm to a larger politico-strategic-economic orientation. On 6 November 2012 India formally applied to Sweden for observer status in the Arctic Council. China, Japan and Singapore have also applied. The council, though power-packed with A5, is non-controversial and benign in its functioning: it refrains from dealing with sovereignty and security issues. It is a house for fact-finding, capacity advancement and information clearing. It therefore gives good reason

for non-Arctic states to become observers.

Nevertheless, India would need to strategize its role beyond an observer position (if and when it gets it). Merely being at the high table should not be the primary goal or a thoughtless reaction because China has applied. In order to be purposeful, India should consider it as a platform with big global players to articulate broader multilateral cooperation and bring resource use and sustainability to the forefront. Global governance issues, especially sustainability and access to resources, will strongly define the future and will create differing views. The Arctic Council can only gain strength from wider membership and participation and evolve mechanisms for effective resource governance. Strategies to improve prevention and preparedness in the region will also be crucial.

The *IFAJ* has posed five specific questions in the backdrop of unfolding dynamics in the Arctic. I have clubbed these into Environmental, Resources and Routes *(ERR).* India's strategy for the Arctic should be to incorporate these aspects and prioritize it based on knowledge and information and not to be impetuous.

From an environmental / scientific angle, India should continue its engagements in the Arctic. Clearly, global warming has had a severe effect in South Asia. The challenge now is to build institutional structures that can steer society away from critical tipping points and ensure sustainable livelihood for all. Only scientific truth can help achieve this and act as a catalyst to improve institutions and decision-making mechanisms, even a proposal for a Sustainable Development Council in the United Nations. Climate mechanism in the Arctic is not settled and knowledge of its causes and effects is far from complete. India has a very strong position in the global climate change debate and the ice-melt in the Arctic reinforces India's argument of the Western world as the emission culprit and for global emissions reduction based on common but differentiated responsibilities and respective capabilities.

On the resource front, particularly oil and gas, there has been much excitement based on estimates by the influential US Geological Survey, which has said that the oil and gas deposits in the Arctic could be between 20 and 25 per cent of the world's undiscovered reserves. But these are only approximations. Even the supposed Arctic treasure trove of 90 billion barrels of oil is as some calculations suggest, only a third of Saudi explored reserves. These resources are limited (on the shelf) and in inhospitable environment (beyond the A5's EEZ). They would need huge investment to extract and involve high environmental cost. In other words, all that oil and gas under the ice sheet is probably not worth the scramble.

For example, Gazprom and Rosneft are not showing much interest in exploring the Eastern Siberian and Chukotka seas. To add to it, the economic crisis has all but ceased exploration activities. India should not go slick over the Arctic oil and gas. Rather, its resource diplomacy should be to look at mineral development in the Barents and secure a footing with the assistance of Russia, its traditional partner. Rapid seaport development in the region will require skilled human resources, which India can provide. In fact, this element can be a strong aspect of bilateral relations with Norway and Russia.

The new shipping routes, Northern Sea Route (NSR) and the Northwest Passage, offer an exciting prospect, but not for India. The Arctic Ocean's coastline belongs mostly to Russia and Canada and each claims the sea routes as "internal waters" – which means that ships need permission to pass through the waters. The US, however, insists that both routes are "international straits". Shipping through the NSR vis-à-vis the Suez Canal route is calculated to cut down the distance by almost 2800 nautical miles or 22 per cent between Rotterdam and Shanghai, a cost saving of 30–40 per cent. This is of interest to China, South Korea and Japan, but not for India. India's naval strategy should be anchored in the Indian Ocean Region, to establish itself as the resident maritime power and to thwart strategies that polarise the IOR. The sea routes shift through the Arctic will not greatly diminish the traditional Europe-Asia route. With the United States' rebalancing its global engagement, focus on the "Indo-Pacific" that integrates the Indian Ocean and the Pacific Ocean into a single region will be far more significant.

What should be India's Arctic Strategy?

India's Arctic strategy should be primarily to advance scientific research in the Arctic and simultaneously build strong bilateral cooperation with the "northern" countries such as Norway and Russia. The principal partner will continue to be Norway in scientific endeavour and Russia on the economic front. The Ministry of External Affairs may like to consider setting up a North Europe desk focusing on the Arctic and facilitating studies of the political environment in the Arctic project. As to the economic opportunities in the Arctic, India does not have the resources to venture in a big way in the region. Having applied for observer status, India can think about ideas that can help in Arctic development, for example supporting the efforts to make the Arctic a military-free zone. Already, a seabed treaty forbids the stationing of nuclear weapons on the Arctic Ocean floor. The A5 have also acceded to

the Antarctic Treaty of 1959 that makes Antarctica a nuclear weapon-free zone and a military-free zone. India could also advocate sustainable resource development and ecological protection in the Arctic, which the A5 are trying to promote cooperatively.

The Arctic, however, lacks a compact environmental protection regime – it is a collection of customary international law and varied bilateral and multilateral instruments, with no unifying connector. India can act as the unifying connector and help bring together a robust regime. This will require connecting science to policy and policy to people. With a toehold in the region, India can then gradually scale up its capabilities.

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Arctic Governance Issues: India should Take a Lead Role

H. P. Rajan*

The Arctic Ocean is melting, new routes will open up for international navigation, large resources - especially oil and gas lying underneath the frozen ice, will also become more accessible and exploitable. This raises the strategic, economic and security implications of the region.

The climate in the Arctic has strong affects on the global climate. Melting of glaciers impacts global warming and affects other parts of the world. The melting of permafrost could lead to release of methane into the atmosphere, which could raise global temperatures considerably. Non-Arctic states are concerned about global warming and are demanding active participation and a role in matters relating to climate change policymaking.

Additionally, certain recent events in the Arctic have spurred renewed interest in the region. In August 2007, the Russian Federation dispatched a nuclear-powered icebreaker and two submarines to plant a rustproof Russian flag made of titanium on the seabed at about 4000m depth at the North Pole to articulate its claims to the Arctic. Days later, Russian bombers flew over the Arctic Ocean. The Canadian Prime Minister immediately announced funding for new Arctic naval patrol vessels, a new deepwater port and a cold-weather-training centre along the North-West Passage. A former Defence Minister of Canada made a helicopter landing on Hans Island, a 2 sq km uninhabited rock claimed by Denmark and Canada.

Western diplomatic and academic circles see in these events increased tension in the region. They have called for urgent action to address the issues involved and formulate action plans to avoid any escalation.

The Arctic region comprises eight states, namely Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden and the United States. Five of these border the Arctic Ocean – Canada, Denmark (Greenland), Norway, Russia and the United States. In the debate over the Arctic, two issues are brought out sharply: navigation in new shipping routes and exploitation of the vast oil and gas resources. The definition of the Arctic is revisited such as by the distribution of permafrost, the Arctic Circle, the 10°C isotherm, the tree-line and /or the salinity boundary in the sea. These are purely geographical or

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climatic definitions and have no legal bearing. Territorial disputes are highlighted: the United States and Russia have not agreed on a border in the Bering Strait; the United States (Alaska) and Canada (Yukon) disagree on the boundaries in the Beaufort Sea; Canada and Denmark (Greenland) have a dispute over Hans Island and over delimitation in the strait between Greenland and Ellesmere Island and over fishing rights and control over the North-West Passage; in April 2010, Norway and Russia reached an agreement on their mutual borders in the Barents Sea and the Arctic Ocean after decades of negotiation.

It is inconceivable that these states will engage in conflicts. More likely, they will engage in closer coordination and cooperation for managing the emerging navigational routes as well as the Arctic resources. In practice, for example, in the North-West Passage, Canada conveniently ignores the passage of US submarines, which may have to notify, surface and show the flag, were Canada to insist on its claim as internal waters. Melting of the Arctic is indeed seen as a huge economic boon. While not much is truly known about what lies underneath the Arctic Ocean and what is exploitable, a lot is anticipated. The melting of ice is likely to create abundance of resources. The fundamental issue is economic: who should control the activities in the region and who should benefit from what. The sporadic hue and cry and political demonstrations carry the hidden message: leave the Arctic Ocean for the Arctic countries to manage.

This brings us to the central question: Is there an existing legal regime that governs the Arctic? The 1982 United Nations Convention on the Law of the Sea was opened for signature on 10 December 1982 in Montego Bay (Jamaica). It entered into force on 16 November 1994, twelve months after the date of deposit of the sixtieth instrument of ratification or accession. Regarded as the "Constitution for the Oceans", the Convention provides a universal regime for all matters relating to ocean affairs and the law of the sea. As of today, there are 164 states parties to it, including all Arctic states except the United States. The Convention brings precision to the limits of national and international jurisdictions and exercise of sovereignty and sovereign rights by states.

The Arctic states, including the United States, fully reckon this. In May 2008, a conference of five Arctic circumpolar states was hosted by the Danish Minister of Foreign Affairs Per Stig Moller and the Prime Minister of Greenland, Hans Enoksen, in Ilulissat, Greenland. It was attended by the Russian Minister for Foreign Affairs, Serguei Lavrov, Norwegian Minister for Foreign Affairs, Jonas Gahr Store, Canadian Minister for Natural Resources, Gray Lunn, and United States Deputy Secretary of State, John Negroponte. The conference

clearly reaffirmed that the Convention provides for the rights and obligations concerning the delineation of the outer limits of the continental shelf, protection of the marine environment, including ice-covered areas, freedom of navigation, marine scientific research, and other uses of the sea. It agreed that there was no need to develop a new international legal regime to cover the Arctic Ocean. Finland, Sweden and Iceland, who were not invited to the Ilulissat meeting, also agree that the Convention provides a comprehensive legal framework for the Arctic Ocean.

The Ilulissat Declaration does not, however, see much of a role for non-Arctic nations. It believes that the five coastal states best implement the legal framework through national action.

At this stage, it may be useful to examine briefly what the legal framework under the Convention is, especially on the two crucial issues of international navigation and resource management. Under the Convention coastal states are entitled to certain maritime zones, drawn from certain baselines, which is the low waterline along the coast (normal baselines) or straight or archipelagic baselines defined by reference to lists of geographical coordinates of points. From the baselines, every state has a right to establish a territorial sea not exceeding 12 nautical miles (nm). The coastal states exercise complete sovereignty over the territorial sea, including its resources. In respect of navigation, ships of all states, whether coastal or landlocked, enjoy the right of innocent passage. Passage is innocent so long as it is not prejudicial to the peace, good order or security of a coastal state. The Convention provides an inclusive list of such activities. In territorial waters, submarine and other under-water vehicles are required to navigate on the surface and show their flag. For passage of warships, prior notification and authorization is required.

Coastal states can establish a contiguous zone not extending beyond 24 nm from the baselines from which the territorial sea is measured. The rights over the contiguous zone extend to (a) prevention of infringement of customs, fiscal, immigration or sanitary laws and regulations within the territory or territorial sea and (b) for punishment of infringement of these laws and regulations committed within the territory or territorial sea. The Convention also provides for removal of archaeological and historical objects from the seabed in the contiguous zone with the approval of the coastal state.

The exclusive economic zone (EEZ) is a zone not extending beyond 200 nm from the baselines from which the breadth of the territorial sea is measured. In the EEZ, the coastal state has sovereign rights for the purposes of exploring and exploiting, conserving and managing the natural resources, whether living or non-living, of the superjacent waters, as well as of the seabed and subsoil.

In addition, the coastal state has jurisdiction with regard to the establishment and use of artificial islands, installations and structures, marine scientific research, and protection and preservation of the marine environment. The EEZ is a zone *sui generis*; its water column has characteristics of both territorial waters and high seas. While the coastal states have sovereign rights over the resources, all states have the right of freedom of navigation and overflight and of the laying of submarine cables and pipelines, and other lawful uses of the sea related to these freedoms. Such freedom includes those associated with the operation of ships, aircraft and submarine cables and pipelines. These freedoms are generally referred to as the freedom of high seas or "free passage".

In the context of ice-covered areas, the Convention grants special regulatory and enforcement rights to coastal states to reduce and control vessel-source pollution within the limits of the EEZ.

The scope of the Convention on what are straits used for international navigation is also spelt out. In these straits, ships of all states exercise what is termed as transit passage. Transit passage means the exercise of the freedom of navigation and overflight solely for the purpose of continuous and expeditious transit of the strait between one part of the high seas or an EEZ and another part of the high seas and EEZ. Thus, transit passage is less restrictive than innocent passage and is almost free passage subject to the conditions laid down. There are clear provisions in the Convention on the rights and duties in the exercise of various passages described above, as well as in the adoption of rules and regulations as may be necessary by the coastal state or states bordering the international straits.

The continental shelf of a coastal state comprises the seabed and subsoil of the natural prolongation of its land territory into the sea. Generally, this natural prolongation is gradual (shelf) and then has a steep fall (slope) and then rises again (rise). The entire feature together is the continental margin. Under the Convention, the term continental shelf refers to the area up to the outer edge of the continental margin, or to a distance of 200 nm from the baselines from which the breadth of the territorial sea is measured, where the outer edge of the continental margin does not extend to that distance. Beyond the continental margin is the deep ocean floor with its oceanic ridges or the subsoil thereof.

Where a coastal state intends to establish the outer limits of its continental shelf beyond 200 nm, the Convention provides certain criteria and complex formulae based on geological and geophysical parametres to determine the continental margin. Thereafter, a cut-off point of either 350 nm from the

baselines from which the breadth of the territorial sea is measured, or a distance of 100 nm from the 2500 isobath has to be used for the determination of the outer limit. Obviously, a coastal state will use the farther of the two. The coastal state is required to submit all such information to the Commission on the Limits of the Continental Shelf, a technical body established under the Convention, for consideration. The Commission is not a United Nations body nor has any institutional identity. It is a body of twenty-one individual experts in the field of geology, geophysics or hydrography, elected by the meeting of states parties to the Convention for a term of five years. The Commission has no headquarters; its meetings are held in private at the United Nations headquarters in New York. Its Secretary provides legal advice on procedural matters and conduct of its meetings.

The Commission facilitates the delineation of the outer limits of the continental shelf; it does not delimit or adjudicate. The Commission gives its recommendations to the submitting coastal state based on data and information submitted to it; the coastal state may then follow these recommendations, or if not satisfied, make a new or revised submission for consideration. It is an extremely complicated process.

In the context of the Arctic, the continental shelf is of particular significance. The Arctic Ocean is frozen sea. Almost all the land underneath it is the continental margins of the five Arctic states, namely, Russia, Norway, Canada, Denmark (Greenland), and the United States. Oil and gas are the resources of the continental shelf. Also, in the Polar regions, permafrost is a rich reservoir of methane hydrates, a major gas potential.

Following the Ilulissat meeting of 2008, Canada organized the second Foreign Ministers' Meeting in Quebec in 2010. In that meeting the coastal states renewed their commitment to address continental shelf issues in accordance with the existing legal framework.

As gas production in Russia is shifting from Western Siberia to resources located in the continental shelf, it is not surprising that the Russian Federation was the very first country to make a submission to the Commission. This related to four areas extending beyond 200 nm, including the Central Arctic Ocean. In respect of this region, the Commission recommended that the Russian Federation make a revised submission. The basic question herein was whether a certain feature claimed in the Russian submission was a ridge or a submarine elevation that can be considered as a natural component of the continental margin. If it were regarded as ridge, the outer cut-off point shall not exceed 350 nm; if it were considered as a submarine elevation as a natural

component of the continental margin, the outer cut-off point could go probably up to the North Pole.

Russia was obviously disappointed with this recommendation. The events that followed, such as the planting of the titanium flag, were in direct reaction to it. The Russian Minister of Foreign Affairs, Serguei Lavrov, however, attempted to clarify that whenever pioneers reach an area unexplored, it is customary to leave a flag there. As to the legal aspect of the matter, he stated that the expedition was a part of the larger work under the Convention to reinforce Russia's claim to submerged ridges as part of the continental shelf. In the last few years, Russia has conducted further intensive scientific studies of the area and collected additional data and information, and has indicated that it will make a new/revised submission very soon.

Norway made its submission in 2006 including the area around the Western Nansen Basin and received the recommendations in 2009. As already mentioned, Norway and Russia have also reached an agreement on their mutual borders in the Barents Sea and the Arctic Ocean.

Canada has indicated its intention to make its submission in early 2013 and so has Denmark in respect of the eastern and northern Greenland. It will be important and interesting to see their actual submissions, especially in the area of Lomonosov Ridge.

As regards the United States, it will have ten years from the date of its accession to the Convention to make its submission. In my view, however, nothing in the Convention prevents a submission to the Commission by a non-party to the Convention. In fact, this question was brought up at the very early stage of the Commission's work. The Commission decided that it would address such an issue when it actually happens. If the United States so chooses, it can still make its submission and seek to legitimize the outer limits of its continental shelf where that extends beyond 200 nm. Such an action will only reinforce faith in the almost universal legal regime that is contained in the Convention.

Most of the petroleum and hydrocarbon resources are the resources of the continental shelf. The rights of the coastal states in respect of the continental shelf are exclusive; if the coastal state does not explore the continental shelf or exploit its natural resources, no one else may undertake these activities without its express consent. The rights of the coastal state over the continental shelf do not affect the legal status of the superjacent waters or of the airspace above those waters, which is the EEZ up to 200 nm, and high seas beyond that limit. The Convention clearly stipulates that the exercise of the rights of

the coastal state over the continental shelf must not infringe or result in any unjustifiable interference with navigation and other rights of freedom of other states.

It is quite possible that where the continental margin of a coastal state extends beyond 200 nm, the coastal state will take no further steps. In other words, it is not obligatory to claim the continental shelf beyond 200 nm. In such a case, the outer limit of the continental shelf will be reckoned as the outer limit of the EEZ, namely, 200 nm.

In respect of exploitation of resources of the continental shelf beyond 200 nm, coastal states have certain financial obligations. The coastal state is required to make payments or contributions in kind in respect of the exploitation of mineral resources beyond 200 nm after the first five years of production at a site. Production does not include resources used in connection with exploitation. The Convention provides that for the sixth year, the rate of payment or contribution shall be one per cent of the value or volume of production at the site. The rate shall increase by one per cent each year until the twelfth year and shall remain at 7 per cent thereafter. A developing state that is a net importer of a mineral resource produced from its continental shelf is exempt from making such payments or contributions in respect of that mineral resource. However meagre this provision is, it does incorporate the concept of common heritage. The modalities on its implementation are yet to be addressed by states.

The high seas are the area beyond the limits of national jurisdiction. In respect of the water column, the limits of national jurisdiction end at 200 nm; in respect of the seabed and the subsoil thereof, the limits of national jurisdiction end at the outer limits of the continental shelf. For navigation in the high seas, states exercise free passage. The area beyond the limits of national jurisdiction is the international area, and is referred to as "the Area" under the Convention. The Area and its resources are the common heritage of humankind. No state can claim or exercise sovereignty or sovereign rights over any part of the Area or its resources. The Convention has established the International Seabed Authority with headquarters in Kingston, Jamaica. All states parties to the Convention are ipso facto members of the Authority. The Authority is the organization through which the states parties to the Convention organize and control all activities of exploration and exploitation of the resources of the Area.

The Convention does not envisage any special regime for the Arctic. Thus in the Arctic Ocean too, the areas beyond the limits of national jurisdiction

is high seas with all the appurtenant freedoms of the high seas, namely, navigation, overflight, laying of submarine cables and pipelines, construction of artificial installations, and conduct of scientific research. Such freedoms are already being exercised in the Arctic Ocean. Furthermore, sovereignty disputes over islands are not unique to the Arctic region. Indeed, there are other regions where such issues are far more volatile and explosive, e.g. South China Sea.

On 6 November 2012, India submitted an application for permanent observer status in the Arctic Council. The Arctic states consider the Arctic Council as the most appropriate forum for management and governance of Arctic issues. Its main areas of focus include climate change, oil and gas potentials, and Arctic shipping. It is not an international organization nor is it a treaty-based body. It has no permanent secretariat or budget either. The Council comprises the eight Arctic countries as members. In 2011 the Council decided to establish a Secretariat in Tromso, and this is expected to become functional after Canada takes over the Chair in May 2013 from Sweden. A high-level forum addresses various matters concerning the Arctic as well as the issues concerning the indigenous people there. The Council also allows permanent and ad-hoc observer countries to participate in its meetings. Permanent observer status is open to non-Arctic states approved by the Council at the ministerial meetings that take place every alternate year. The Chairmanship of the Council rotates every two years. Observer states receive invitations for most Council meetings, but their participation in projects and task forces within the Working Groups is not always certain.

The Arctic Council members are also not quite open to granting permanent observer status to non-Arctic countries for fear that their own unique role and interests will be compromised. The request by China, for example, was not accepted. As regards India, indications are that Norway supports India's application. Lobbying strongly with Canada is necessary as it takes over as the Council's Chair in a few months.

With observer status in the Arctic Council, India's role will be unique, geopolitically speaking. So far, India's interest has been scientific. Opening up of new corridors for navigation in the Arctic may not vitally affect India's shipping interests. Commercial interests from the perspective of commodity trade will need a review as export of some goods from China and Japan will increase. However, the economic implications for some Arctic countries, especially those that own a large fleet of icebreakers and ice-strengthened vessels, can be more pronounced. As the demand for icebreakers and ice-strengthened vessels decreases, these states may wish to deploy them for

other purposes like scientific exploration and encourage non-Arctic states to participate.

The Arctic states are also likely to consider imposition of transit fees in the new routes that will open up. The passage regime as contained in the Convention being no different for the Arctic, any such new measures should be compatible with the provisions of the Convention and should be non-discriminatory.

In respect of the exploration and exploitation of the resources of the area beyond the limits of national jurisdiction, the situation is somewhat different. The Convention, together with the 1994 Agreement relating to the Implementation of Part XI of the Convention, provide an adequate legal regime and appropriate framework. The Convention recognized India as the first pioneer investor in respect of its activities in the location, survey and evaluation of polymetallic nodules in the Central Indian Ocean outside national jurisdiction. In March 2002 India entered into a fifteen-year exploration contract with the Authority for exploration for polymetallic nodules in the Central Indian Ocean. The Authority has also adopted the Regulations on Prospecting and Exploration for Polymetallic Sulphides in the Area and the Regulations on Prospecting and Exploration for Cobalt-Rich Crusts. These regulations apply to the Arctic as well.

It is important, where decisions concerning the Arctic are made, to ensure that the integrity of the Convention is maintained and multiple regimes or sector-based approach are avoided. Except Russia, no other Arctic state has secured any exploration contract for deep seabed exploration in the Area so far. Also, policy issues relating to climate change are a global issue, not confined to the Arctic states alone. India has voiced its stand on this matter quite clearly in other forums.

Although India's interest in the Arctic is relatively new, it has more than thirty years of scientific research experience in the Antarctic. This, coupled with India's active involvement with the Law of the Sea negotiations for over fifty years, as well as experience in deep-sea exploration, makes its expertise unique. India is well represented in all the institutions established by the Convention. It is time for this country to take a lead role in the Arctic governance issues within the overall framework of the existing legal regime. The opportunity is ahead.

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