Second tragedy of global commons: strategic competition and conflict over humanity's common assets

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Abstract

Global commons are the dimensions of sea, air, space and cyber space that are not under any nation's control or jurisdiction. Global commons are governed by international norms, rules and agreements, and provide access and utility to all nations on the globe. The global commons are suffering from tragic situations. The first tragedy of the commons pertains to environmental degradation and resource scarcity caused by their overuse. Another tragic situation is linked with the fact that the United States of America is the biggest military user of global commons. Based on this, the American politico-strategic leadership posits that the United States is the commander and guarantor of the global commons. NATO and India support American command of the commons, whereas the other powers resent America's overbearing role. Consequently, there is a competition and conflict over access and use of the commons among the major powers. This competition and conflict is the second tragedy of the commons. There is evidence that all the four domains of the commons are afflicted by the tragedy. Whereas Pakistan's national security is affected by the second tragedy of the commons, the country is not adequately prepared for it.

Introduction

Global commons have traditionally been defined as "resources open for use by the international community, and not under the jurisdiction of any state, such as: oceans, atmosphere, deep sea-bed and Antarctica."[1] Some experts contend that the Arctic should be considered the fifth common. It is due to the opening of new sea lanes as Arctic ice is melting, and various states are laying territorial claims in the Arctic region.[2] In the current strategic lexicon, however, global commons are conceived to be the realms of sea, air, space, and cyberspace that belong to no one state but to the humanity as a whole, and provide provisions and access to all on the globe. Cyberspace is the latest inclusion in the realm of the commons.

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The commons share certain characteristics: they are not owned or controlled by any single entity; international cooperation and agreement is a must for their utilization; they are more useful as a whole as compared to their being fragmented into smaller parts; states and non-state actors with appropriate technological capabilities are able to access and use them for economic, political, scientific and social purposes. The commons are also used as a medium for strategic movement and maneuver.

Scholars have long studied the commons as shared properties or resources that require to be jointly managed. Contemporary academic investigation of the commons was catalyzed by the seminal article, "The Tragedy of the Commons," written by the famous ecologist Garrett Hardin in 1968. Since the common resources are open to all, there could be a situation in which several multiple individuals, acting independently and rationally in their own interest, would eventually deplete a shared resource; even when it is clearly not in anyone's long-term interest for this to happen. This dilemma was described as 'tragedy' by Garrett Hardin. He asserted that resources, assets and properties that were common among users tended to be misused, overused and ultimately got ruined. Individual self-interest that is immediate, takes precedence over the collective interest that is long term. Ultimately, the community is the loser. This loss is often permanent and irrecoverable. That is indeed tragic.

There is the 'second tragedy of the global commons' on the horizon.[3] This tragedy refers to competition and conflict between big powers over the resources, spaces and advantages of the commons. Barry Posen in his 2003 article "Command of the Commons: The Military Foundation of U.S. Hegemony" advocates that the U.S. commands these commons because it is the most extensive military user of them.[4] He contends that the ability to command the global commons is the basis of America's power projection and provides it the ability of unhindered access to markets and resources. U.S. command of the commons implies that it can credibly deny use of the commons to others if its interests so demand.

Posen continues to assert that other states might use the commons, but only in situation of consent and peace with the U.S. The others could also acquire military capabilities to move through or deploy in the commons, but only when such an access is not prejudiced to U.S. interests. This narrative of command of U.S. on global commons has invited counter claims, competition and resentment by other world powers. NATO and India are, however, band-wagoning with the U.S. in its proclaimed command of the commons. The ensuing competition and

conflict over humanity's common assets is leading to the second; and potentially more catastrophic; tragedy of the global commons.

Problem statement

The extension of the perennial struggle over resources, power and status to the common assets of humanity – the global commons – is indeed tragic, and calls for serious inquiry. This paper analyses the claim of military exclusivity in the global commons and relates it to the competition and conflict among great powers in the realm of the commons. The role of NATO and India in supporting American command of the commons is also looked into. The paper highlights the implications of this competition and conflict on Pakistan's national security and offers recommendations in this regard.

Theoretical framework

Unbridled freedom in using a common property is likely to bring ruin to all parties.[5] By using the commons indiscreetly, each actor pursues his own best interest and is reluctant to consider commons' replication in time and space. This selfishness invariably leads to environmental degradation and resource scarcity. This condition was thought to be 'tragic' by Harden. In order to put an end to this tragedy, Hardin had envisaged that a central authority ought to manage the common resources and shared spaces. This central authority was not meant to be a powerful state. Rather, it was to be a body formed by the states based on rules, norms and mechanisms to manage and regulate the use of commons by all states. The so called 'Posenian School' posits the United States as the only commander of the global commons. Posen believes that the United States must prevail in all domains of the commons to project its military power. This thinking has brought strategic-military competition in the global commons. Clearly, the other powers ought to react to balance American hegemony in the commons.

The commons would thus become an arena of great power competition and conflict. This is the situation of the second tragedy of the commons. The second tragedy of the global commons actually pertains to the exclusivity in management and usage of the commons. "If apathy or indiscretion explains the first tragedy, proclivity for exclusive usage and conflict over the commons underscore the second tragedy."[6] Homer Dixon's theorization that environmental degradation and consequent resource scarcities lead to conflict also explains the second tragedy of the commons.[7] There is a wide body of conflict theorizing that explains the conflict in terms of competition and exclusivity over resources, privilege and status. Randall's theoretical perspective on the relationship between

military geopolitics and state expansion is especially instructive in understanding the Posenian school of thought.[8]

U.S. command of global commons

Following Posen's article, the American politico-strategic leaders and security analysts have been highlighting the important role of global commons in the national security of their country. They have been particularly serious about increasing 'challenges' in the global commons that the U.S. now confronts. While addressing the Air War College in 2008, the then Secretary of Defense Robert Gates said, "Protecting the 21st century's 'global commons – in particular, space and cyberspace – has been identified and adopted as a key task."[9] Under Secretary of Defense for Policy, Michèle Flournoy, wrote in 2009: "... the United States will need to pay more attention to emerging risks associated with the global commons, those areas of the world beyond the control of any one state — sea, space, air, and cyberspace—that constitute the fabric or connective tissue of the international system … and we have a strong economic interest and security interest in keeping those global commons open and free from threat."[10]

In February 2010, in a briefing session with Admiral Michael Mullen, Secretary Robert Gates reiterated that Department of Defense ought to prepare for much broader range of security challenges. He observed that the threats had ranged from the use of sophisticated new technologies to deny U.S. forces access to the global commons, to the threat posed by non-state groups developing more cunning and destructive means to attack and terrorize the U.S. in the realm of the commons.[11] The 2010 Quadrennial Defense Review declared that "managing secure access to the global commons" was one of the main priorities of U.S. defense policy. Quite naturally, the other powers would not be satisfied with U.S. role of being the sole guarantor of the commons. Beijing has emerged as the principal peer competitor for Washington as regards the use of the commons. Russia and China are challengers in the commons' management. Brazil, EU and regional organizations like ASEAN and SCO also seek a role in maintaining the international system in ways commensurate with their perceived power and national interests.[12]

> American military primacy will not dissuade rising powers from acquiring capabilities designed to contest U.S. power on the sea, in the air, in space and in cyberspace. Thus, while the United States should continue to develop military capabilities to ensure it can counter anti-access threats posed by state and non-state actors in the global commons,

it must recognize that it cannot and should not protect the commons alone.[13]

America's command of the commons is being challenged by increasingly determined military capabilities. The self image, where the United States sees itself as "the sole guarantor of the openness of the global commons" and considers other states as "free-riders" of the common, is becoming untenable.[14] It is now being acknowledged that the United States' power and authority is on the decline. That implies that relative power and authority of other powers is increasing in relation to the United States. As the world is becoming multi-polar, U.S. leadership in the global commons is being contested by other power poles.[15]

The cardinal importance of the commons for the world economy, trade, commerce and communication has been long established. For instance, the sea provides passage to more than 50,000 merchant marines globally. This constitutes more than 85 per cent of the world trade. In one year, around 2.2 billion passengers, nearly 40 per cent of world's tourists and over 44 million tons of cargo travel by air. In the year 2007, the worldwide economic effect of air transport has been calculated at $3.5 trillion. This is 7.5 per cent of world GDP. The economic value of the satellite communications, satellite imagery, remote-sensing, positioning and weather data provided from the space was estimated at $257 billion in 2008. Every day, financial tradesmen in New York City transfer in excess of $4 trillion via the Internet. This transaction roughly equals 25 per cent of annual GDP of the United States.

The *Quadrennial Defense Review Report* – 2010 declares: "Global security and prosperity are contingent on the free flow of goods shipped by air or sea, as well as information transmitted under the ocean or through space."[16] It is a matter of fact that unhindered access to global commons is vital for everyone on the globe. But, this unhindered access is not the product of American command of the commons or its military superiority. There is a cardinal role of international cooperation, norms, rules and treaties in maintaining free access to global commons. Whereas shared norms, rules and treaties facilitate international cooperation on the commons, the narrative of exclusive leadership role and command of the commons tends to polarize the international system.[17]

Peril at sea

Seas have been the principal means of international trade, commerce and socio-political interaction since the dawn of history. The traditions and practices for access and passage through the seas have evolved over the millennia. In

recent times, more formal, multinational and treaty-based regulatory and management institutions have developed. In 1956, the United Nations Convention on the Law of the Sea (UNCLOS) was initiated. It was legally put into effect in 1994. UNCLOS is the primary agreement among the nations on the sea. It lays down territorial boundaries at 22km from the national shore. It allows state's resource management rights within an area of 370 km from shore – called exclusive economic zones (EEZ). UNCLOS has also established the International Tribunal for the Law of the Sea (ITLOS). The Tribunal has the mandate to resolve disputes between states. Most countries of the world, including the global powers, have ratified UNCLOS. Oddly, the commander of the global commons, the United States, has not ratified UNCLOS. The UN International Maritime Organization (IMO) was established in 1948. This is a regulatory body for global shipping. It makes rules on marine safety, ecology and technical aspects. These treaty-based arrangements are performing satisfactorily, even though some improvements might be needed in certain aspects.

Commensurate with its self-image as the guardian of free movement on the seas, the U.S. has deployed 11 carrier groups from the Mediterranean to the Pacific. Russia has one and China has almost built its first carrier group. The U.S. has long developed scores of naval bases and supporting ports throughout the world. Its naval footprint is bigger than that of its allies and competitors put together. However, it is not merely due to U.S.' overwhelming sea power, but the cooperative agreements like UNCLOS and IMO that the sea trade, travel and passage is enjoyed by all nation-states of the world. In such a situation, U.S.' non-ratification of UNCLOS goes uncomfortably with its claim of being protector of international access to the seas. Similarly, the international response to piracy problem off the coast of Somalia and other places highlights that it is not the preponderant American naval capability, but international community's cooperative capacity to handle anti-access situations that is carrying the day.

In 2005, the Northeast Passage opened up along the Eurasian border for the first time in recorded human history. The Northwest Passage along Canada opened up for the first time in 2007. These openings revealed potential transportation routes of significant savings in time and fuel. Although they are generally not navigable today, research and military vessels have transited through these passages during the past few years. There is reasonable likelihood for ice-free conditions during the summer in the Arctic. Some estimates suggest that as much as 25 per cent of the earth's untapped energy resources could be found in the Arctic. These new opportunities are challenging the long-held international moratorium on competition in the Arctic Circle. Frank Hoffman has remarked: "The only thing in the Arctic melting faster than the northern ice cap is

the international comity."[18] Presently, there is little agreement on who should patrol and secure the Arctic routes.

But, Russia seems determined to secure its northern flanks and to support its claims to an EEZ that could assure it strategic leverage with access and control over a vast resource base. The Russians have taken many initiatives to assert their claims. Russia argued before a UN commission in 2001 that waters off its northern coast were an extension of its maritime territory. The then Prime Minister Vladimir Putin described the urgent need for Russia to secure its "strategic, economic, scientific and defense interests" in the Arctic. The Russians have marked their claim by planting a Russian flag onto the ocean bed. In 2007, Russian mini-submarines marked Kremlin's claim to the region with a 14,000 feet descent to the seabed floor. The Russian submarines collected some geological samples and dropped a titanium canister containing the Russian flag. Russia has also published a national policy on the Arctic region, declaring the area as "strategic resource base."

Russia's national security strategy-2009 solemnly observes, "With the ongoing competition for resources, attempts to use military force to solve emerging problems cannot be excluded."[19] Russia plans to modernize its icebreaker fleet, increase maritime air patrols and house more researchers in the Arctic to back its claim to the vast and untapped resources of the region. With China modernizing its navy and asserting its territorial claims in the South China Sea, and the U.S. backing Japan, the Philippines, India and Australia; the peril at sea common is attaining dangerous proportions.

The contested air

Air travel depends on legitimate and legal use of national airspace for ceaseless transit based on elaborate agreements on transit rights. In 1947, UN International Civil Aviation Organization (ICAO) was established to regulate air travel. Today, ICAO has 191 member states. As is the case with piracy at sea, any deliberate interruption or denial of the air common is likely to come from actors other than the states. While terrorist or non-state attempts can disrupt air traffic, the regulatory regime of ICAO, based on internationally established air corridors, air defense identification zones, ground-based radars and navigational aids, is well established. At the same time, intergovernmental cooperation between national police and security agencies is well coordinated to thwart attempts to disrupt air domain. Due to near universal participation in the ICAO regime, the systemic threat to the air commons is so unlikely that some security analysts do not consider air as a one of the commons. Things have changed.

Now, air common is being used for political purposes. The use of drones to attack targets in other countries is increasing by the day. These drones use air corridors or make unauthorized use of sovereign air space for military purposes. The use of air common by the United States for drone attacks has become a routine, albeit a contested activity. Russia, China, India or Israel might do the same to further their strategic interests. That would bring rivalry between states in the air common with tragic consequences.

Competition and conflict in the final frontier

Ambassador Gregory L. Schulte, United States Deputy Assistant Secretary of Defense for Space Policy, has described space as increasingly "congested, contested, and competitive."[20] Today, 11 nations have the capability to launch vehicles into outer space. More than 60 countries and private corporations own and control more than 1,100 operational satellites. From TV channels and weather forecasts to the positioning systems in our cars, satellites play an unseen but pervasive role in our daily lives. The United States is the principal user of space for scientific, civilian, remote sensing and military-intelligence activities as compared to any other nation. It alone accounts for 75 per cent of global spending on space and owns more than 40 per cent of active satellites orbiting the earth. Its Strategic Command's Joint Space Operations Center (JSPOC) detects and tracks space debris and other objects through a network of 29 earth-based radars and optical devices. JSPOC provides free collision warnings against space debris and satellite traffic to the state-owned and commercial space agencies. Based on these attributes, the United States considers itself as a natural space leader and wishes to protect its access and dominance in space.

The satellites and space activity is being managed by a combination of UN initiatives and guidelines, Cold War agreements between the U.S. and the former USSR, and the industry standards. Radio frequencies, satellite orbits and technical standards are stipulated by UN International Telecommunications Union (ITU), which was established in 1865. ITU has near-universal membership. Except for EU, most countries of the world, including the big powers, are its members. The Outer Space Treaty was signed by the space-goring nations in 1967. It provides the basic criteria for space activities. This treaty bans deployment of weapons of mass destruction in space and forbids states from laying claims on moon and other celestial bodies. But, the Outer Space Treaty has not established a permanent mechanism for coordination among the member states, who consult one another on need basis. Another UN arrangement, the Conference on Disarmament (CD), has been discussing the treaty on Prevention

of an Arms Race in Outer Space (PAROS) for some time now. [21] Any concrete outcome from PAROS is still awaited.

In the mid-80s, the U.S. and the USSR mutually agreed to observe moratorium on testing anti-satellite weapons (ASAT). The Outer Space Treaty, however, has no binding rules on anti-satellite weapons. In the aftermath of China's destruction of one of its own satellites in 2007 by an ASAT weapon, there has been increasing concern in the U.S. about protection of its satellites from anti-satellite weapons. China is not the pioneer nation in developing ASAT weapons.[22] It has merely followed suit, and has successfully demonstrated its technological prowess in space defense. India is also an established space power now. It has launched a constellation of communication and remote sensing satellites. India is reported to be developing ASAT weapons. It is noteworthy that a satellite's destruction in orbit creates a debris cloud, which could damage other satellites or spacecraft. The problem of debris management in space has become serious.

Apart from the serious problem of managing space debris, the increasing role of new space actors from the private sector underscores the need to create international rule-based and legally-bound regulations for the space common. This complex undertaking requires international coordination and cooperation. The claim of commanding the space common makes other powers apprehensive about their security in space. Chinese ASAT experiments have confirmed this trend. In 2008, the European Council passed a Code of Conduct for Outer Space Activities. It was revised in 2010. The Code of Conduct addresses issues pertaining to space operations and space debris. It develops collaboration, consultation, and notification mechanisms on the afore-mentioned issues.

The Code of Conduct is a non-binding and non-enforceable mechanism. But as is the case with many multilateral regulatory arrangements, the U.S. has not fully accepted the Code of Conduct. It has cajoled EU to insert clauses in the Code on the right to self-defense in Outer Space. Since 2008, China and Russia have been proposing a legally-binding treaty to ban weaponization of space.[23] This is known as Treaty on the Prevention of the Placement of Weapons in Outer Space (PPWT). The U.S. has opposed this proposal on the grounds that it might restrict its strategic options and constrict its command of the space.

> As we begin this work, the United States has made clear to our partners that we will not enter into a code of conduct that in any way constrains our national security-related activities in space or our ability to protect the United States and our allies...[24]

Cyberspace: the approaching armageddon

Cyberspace is the newest of the commons. It is not a physical domain. Other than states, the private sector has a crucial role in the infrastructure, management and regulation of this common. The physical nodes of the internet exist within states and are subject to national law. Unlike other commons, physical nodes of cyber space do not exist outside of national control. The American origins of the internet are reflected in the manner in which internet standards are managed. The Internet Corporation for Assigned Names and Numbers (ICANN), a private non-profit entity in contractual arrangement with the U.S. government, has conducted business of internet addresses and registries since 1998. While ICANN operations have been smooth and credible, many countries prefer a formal international body to manage technical internet issues.[25]

ITU has been suggested as a neutral management body. Many non-Western states are trying for management of internet within an international framework that provides for individual countries with rights and roles, rather than leaving the working of internet to the non-profit sector. All EU nations are members of ITU. But they have collectively voted against granting more powers to ITU. The UN Internet Governance Forum (IGF) is another forum that has become a leading platform for states and other actors to deliberate internet governance.

States can filter and censor internet within their borders, and efforts to protect against cyber attacks are currently located within the national boundaries. There is an intense espionage activity and cyber conflict going on between states, in particular between major powers. Cyber security has become an important component of national security matrix. Cyber space has become the 5th dimension of warfare.[26] This has been amply demonstrated by the Russian adventure into Estonia in 2007 and Georgia in 2008. The Pentagon has deliberated to declare cyber attack as an act of war.

The United States has established a Cyber Command with full operational capability on October 31, 2013.[27] According to a recent report, the U.S. spy agencies carried out 231 offensive cyber operations against adversarial nations/targets in 2011 alone.[28] It is widely reported that China has established military units with sophisticated capabilities to launch cyber operations against economic and strategic targets. In the 2013 summit meeting between Obama and the Chinese President, cyber security was discussed as an issue.[29] Iran has reported incidents of Stuxnet attacks on its nuclear facilities.[30] The Stuxnet attacks could have had catastrophic consequences. Non-state cyber warriors or

hackers are equally, and at times more, dangerous threats to the cyber common. Intense war in the cyber space is already on.

Being a non-physical and virtual reality common, the governance and regulation of the cyber common is most complicated. There are complex problems of attribution, coordination, verification and policing in the cyber pace. Power in the cyber common is not really linked with the existing international power hierarchy. Power of nations in cyber space is more horizontal. Even a small nation-state could develop formidable cyberspace power. The common of cyber space has become the most active arena for international conflict and competition. It is also becoming a strategic "flash point" between the major world powers. For the time being, it is under nobody's command. There is an immediate need for all states to establish an international rule-based regime under the UN to govern and regulate cyberspace. Leaving cyberspace to the power play between nations is simply dangerous.

NATO and the commons

North Atlantic Treaty Organization (NATO) is struggling to remain relevant in the changed geo-political, geo-economic and geo-strategic landscape of the post-Cold War world.[31] NATO was created in the post-World War-II international order to act as collective security instrument of the Trans-Atlantic nations against the threat of Communist Russia. The real purpose of NATO has been wholesomely captured by Lord Ismay: "…to keep the Russians out, the Americans in and the Germans down." After re-unification of Germany, break-up of the USSR, collapse of Warsaw Pact, and end of the Cold War, the basic rationale for NATO does not exist anymore.

Nevertheless, the United States wants to keep NATO intact due to dictates of offensive realism, which explains that a great power's appetite for more power does not diminish even after its rival great power has been weakened. The U.S. would still like to keep Germany down by the continued presence of its military forces in Germany, and still wants to curtail and contain Russia from becoming a global power. Within Europe, UK and the new Eastern European members want to perpetuate NATO for their own reasons. Since the end of Cold War, NATO leaders have met many times to redefine its charter, mission and role to make NATO more relevant. Due to historical legacies and NATO's Trans-Atlantic character, attempts to redefine its role have generally lacked convincing logic and have raised more questions than answers, when analyzed critically.

In the Lisbon Summit of the heads of states and governments of 28 NATO nations held on November 19-20, 2010, NATO leaders focused on making "The Alliance more effective, more efficient and more engaged with the wider world." They decided to streamline the alliance's military command structure, and to develop new capabilities to defend against emerging threats of ballistic missiles and cyber-attacks. Most importantly, NATO leaders decided to adopt a "New Strategic Concept" to serve as the alliance's road map for the next 20 years, "re-enforcing the commitment to defend one another against attacks as the cornerstone of Euro-Atlantic Security;" and to promote this security arrangement through "a wide network of partner relationships with countries and organizations around the globe…"[32]

The proceedings of 2010 Lisbon Summit reflect NATO leaders' strategic compulsion of expanding its role much beyond the Trans-Atlantic region to include the whole globe and beyond to the space. One of the main themes of the Lisbon summit was that "Global Commons" were being threatened by state/non-state entities inimical to the United State and the alliance as a whole. Since the Alliance depended on the global commons for transit, movement, deployment and conduct of trade, commerce, energy resources, communication and the military assets; the maintenance of assured access to the global commons was thought to be crucial for the Alliance.

NATO asserts that "The domains of the high seas, international airspace, outer space and cyber space are interlinked and critical to the prosperity and security of the alliance nations." It acknowledges that the problem of assured access to the commons cannot be solved by NATO alone and that "the assured access to and use of the commons is a global concern." Nevertheless, NATO concentrates on how best to build its capacity, capability and partnerships to gain assured access.[33] Little emphasis, if at all, has been given to the idea that the global commons are for all nations and the whole humanity; and the best way for assured access to them is to strengthen the existing international legal regimes, treaties and best practices that regulate each domain.

NATO, like the U.S., pre-supposes the existence of threats to its assured access to the global commons. This assumption is paranoiac; and when used as an argument to build military capabilities to "secure" access to global commons, subjects the commons to the military competition over common. As highlighted earlier, the importance of each domain is established by the latest statistics on trade, commerce, communications and transit occurring in each domain. This importance is for every nation and not merely for the alliance or the U.S. NATO mindset is evident when it describes the Russian claims to Arctic region's

resources, China's claims and rights in its EEZ and the South China Sea, and the enhancing Chinese capability in space and cyber space as threats to NATO's access to the global commons. Like the U.S., NATO seems to believe that other powers have no rights to ensure their access to the commons. This feeling of exclusivity in the commons is rather precarious.

The illegal non-state anti-access actions occurring in the common domains are occurring against the whole international system and not necessarily against NATO/USA in particular. Therefore, the response against these threats to the global commons has to be international and not exclusively by a particular alliance. The UNCLOS regime in the maritime domain, the ICAO (Chicago Convection) in the air domain, Outer Space Treaty, Anti-Ballistic Missile Treaty and PAROS in the space domain and the ongoing international effort and coordination for regulatory mechanism in the cyber domain against cybercrime and cyber attack; are the mechanisms that regulate, manage and administer the use of global commons. NATO makes a mention of these legal regimes and arrangements, but does not take them as the foundational universal mechanisms for assured access to the global commons. It seems that the self-assumed responsibility for assured access to the global commons, based on military capability, is the basic argument of NATO.

NATO assumes that its enemies would have a considerable advantage by restricting the movement of NATO military forces; denying access to the commons; and preventing NATO from achieving its mandate of guarantying transatlantic security.[34] NATO Cooperative Cyber Defense Center of Excellence has been established in Tallinn, Estonia. Rapid Reaction Teams built in this centre are equipped to protect NATO networks in the event of attacks. The teams would also be available to NATO nations on request. NATO is sharing information on defence technologies, intelligence and best practices, and is linking its networks with other national networks. NATO network of partnerships comprises one-third of the world's countries. It aims to build a truly secure cyber community. NATO boasts that it protected its members during the age of the Berlin Wall, and it must now "protect them during the age of the firewall."[35] NATO's solo flight in the management of the global commons would generate resentment in emerging powers. NATO's bid to be the main strategic institution on global commons would be resisted by non-NATO powers, with growing tensions in regions such as the Arctic and Central Asia.

India's bandwagoning on global commons

In its early post-independence history, India placed a special emphasis on protecting and preserving the ''common heritage of mankind.'' It also emphatically supported the comprehensive ban against deployment of weapons in the global commons like Antarctica, sea beds, and outer space. It insisted on just rules of the road for governing the commons, and was critical of attempts by major powers to create loopholes in the agreements that limit the demilitarization of the commons. This Indian universalism took a nationalistic turn after Nehru's death in 1964. Since then, Indian leaders have been more conservative in blunting the ability of the international system to interfere in India's internal affairs. They believe that "United States and India are natural partners in reshaping the global commons."[36]

Indians claim that in all major areas of global commons, its capabilities are improving, and it is set to influence strategic events in the near future. India is becoming a great power and it has "major attributes of successful model entrepreneurial Anglo-Saxon capitalism, liberal democracy, and maritime orientation."[37] The country's internal balancing has taken various forms and is reflected in the increasing defence budget which was announced as US$41 billion for 2012-13. This is a 17 per cent increase on the previous year. The enhanced defence budget would consolidate the military modernization programme with the recent deal for 126 French Rafael fighters supplied by Dassault in conjunction with over 200 fifth-generation fighter aircraft to be developed in cooperation with Russia by 2017.[38]

The modernized Indian Navy is emerging as one of the world's largest navies and is influencing politics of Indian Ocean. It is trying to project its influence into the Pacific, where it is rubbing shoulders with the Chinese sea power in concert with the United States Navy.[39] An ambitious space programme, supported by the United States, is turning India into a formidable space power that has long been launching near-earth and geosynchronous orbiting satellites. India is at the leading edge of satellite remote sensing and communication technology. Its lunar exploration programme has helped in discovery of water on the Moon. India's satellite launch capability enables it to build intercontinental ballistic missiles. India's first Mars orbiter is scheduled for launch in late October 2013. The Mars orbiter is planned to arrive in Mars Orbit in September 2014. Built at an estimated cost of $76 million, the robotic mission would constitute India's first space venture to Mars, and serves as a test of high technologies and techniques essential for deep-space probes.[40]

India is also on its way to building anti-satellite capability in response to the Chinese space power.[41] Indian Defence Research and Development Organization Director General and scientific adviser to the Defence Minister, V. K. Saraswat, said that "the launch of Agni-V ICBM in April 2013 opened a new era, and apart from adding a new dimension to our strategic defence, it has ushered in fantastic opportunities in building ASAT weapons and launching mini/micro satellites on demand." Earlier, in January 2010, Saraswat had said that "India is putting together building blocks of technology that could be used to neutralize enemy satellites. We are working to ensure space security and protect our satellites. At the same time, we are also working on how to deny the enemy access to its space assets."[42]

In cyberspace, India is busy consolidating its global power status by creating sophisticated cyber defence and cyber warfare capabilities. In 2004, the Department of Information Technology created the Indian Computer Emergency Response Team (CERT-In) to thwart cyber attacks on India. A government-private sector set-up under the National Security Advisor Shivshankar Menon began in October 2012 to beef up India's cyber security capabilities. Other steps include the isolation of various security agencies to ensure that synchronized attack could not succeed on all fronts, and appointment of a National Cyber Security Coordinator. This comprehensive approach would enhance, align, and unify commercial industry, civil agencies, and military actions.[43] Indian armed forces are planning to create a tri-Service command to handle cyber warfare, on the lines of U.S. Cyber Command.[44]

Implications for Pakistan

There are serious implications of the second tragedy of the global commons on Pakistan's national security. Pakistan has been deeply aligned with United States during the Cold War and after the Cold War in the post-9/11 period. During these engagements, Pakistan has not been able to accrue the benefits of its strategic alignment with the American super power. On the contrary, Pakistan's national power seemed to reduce and its national security became more precarious after every 'global' alignment with the U.S. The reasons for such a situation lie in Pakistan's inability to correctly analyze its own national interests and those of the United States. Now, Pakistan must clearly understand its own interests and those of the U.S. in the ongoing strategic competition over the commons.

The U.S. sees itself as the guardian of the global commons. It is seeking alignments with the powers that are willing to accept and promote American

domination of the commons. The Indian strategic community supports the U.S. in maintaining its dominant role in governance of the commons.[45] Consequently, the U.S. considers India as a 'benign' strategic peer-competitor in the realm of the commons.[46] President Obama considers the U.S. relationship with India as one of "the defining partnerships of the 21st Century."[47] The U.S. is also building India as its Asian pivot. Pakistan needs to understand this dynamics in a wholesome manner.

As far as NATO is concerned, Pakistan is already facing the consequences of its presence in Afghanistan. NATO's perceptions and its strategic orientations are important for Pakistan's national security. U.S. command of the commons is fully supported by NATO as well. Pakistani policy makers, strategists, security analysts, think tanks and the academia must understand this linkage. Pakistan's survival lies in doing the critical internal balancing in the realms of education, technology, merchant-marine, commercial aviation, satellite technology and cyberspace. Only a knowledge-based and technologically developed nation can get advantages that lie in the commons.

All domains of the global commons are vital, and Pakistan needs to do serious work in each one of them to enhance its national security. In the maritime domain, Pakistan seriously lacks merchant marine capability. It has only ten or so aged tankers and cargo ships. Pakistan has no passenger carrying sea-liners.[48] Pakistani seaports and shipbuilding/servicing capabilities are limited and underutilized. Pakistan Maritime Security Agency is not fully capable of safeguarding the country's exclusive economic zone. At the same time, Pakistan has done little to exploit the rich potential of its EEZ. There are also issues of legal positions under UNCLOS on EEZ jurisdiction, continental shelf and boundaries. The boundary issue of Sir Creek with India has been awaiting resolution for a long time. The newly built Gawadar Port has great potential. But, that alone cannot compensate for the structural weaknesses of Pakistan in the domain of the sea common.

In the air common, Pakistan has a well developed civil aviation infra-structure. But the institutional failure of Pakistan International Airlines as evidenced by huge financial losses, aging fleet and sadly shrunken air destinations, has lowered the prestige of Pakistan's aviation industry. At the same time, the deadly American drone attacks have been choreographing 'the second tragedy of the commons' in Pakistan since 2006.[49] On May 2, 2011, the U.S. raided through the air common to kill Osama bin Laden in Pakistan. From the air defense standpoint, the raid depicts questionable air defense prowess of a nuclear power to defend its air space against intrusions. This vulnerability must be

plugged. At the same time, Pakistan needs to engage actively in the ICAO to secure its aviation rights under emerging air space management proposals.

In the space domain, Pakistan faces real challenges. There is inadequate scholarship/expertise in space sciences, engineering and technology. The vital importance of space in a nation's security and well-being is little understood in Pakistan. There is hardly any determined space policy and programme. The recently proclaimed Space Vision-2040 is too distant.[50] There are few Pakistani-origin scientists and engineers in NASA and the European Space Agency. On the other hand, Indian scientists and astronauts continue to participate in advance space-related activities at NASA.[51] Indians are launching their own space vehicles, the latest one is to Mars. On the contrary, Pakistan does not have indigenous capability to launch space vehicles. SUPARCO has not developed as much as it should have. Pakistan also needs to watch its interests in securing orbital spaces for its space vehicles, and radio frequency band for its space communications. The surest way to secure orbital positions and frequency bands is to launch and operate our own satellites.

In the domain of cyberspace, the Senate Committee on Defence and Defence Production "identified cyber warfare as a new, non-military security threat to the country given its location and strategic role."[52] In 2012, the Committee proposed a seven-point action plan for cyber-secured Pakistan. The action plan is a long way from implementation. The government should encourage the private sector to establish information technology universities and institutes in collaboration with advanced nations. There is little substance in Pakistan's academic, technological or institutional collaboration on international level in the global commons. For example, no Pakistani mission or agency has been cited in the extensive "Endnotes" or the list of "Participants and Contributors" of the global commons report compiled by NATO.[53] This shows that Pakistan needs to enhance its international footprint – intellectual, technical and technological – in all the domains of the global commons.

The above appraisal highlights that Pakistan is not well-prepared to protect its security and well-being in the age of the second tragedy of the global commons. Pakistan has the ability, however, to secure itself in the challenging times. For that, it would need to integrate the resolve and vigour of its people, and take the required steps to enhance its national security.

Recommendations

(i) Subjects like "Introduction to Global Commons" and "Politics of Global Commons" should be introduced in the universities like the Quaid-i-Azam University, Karachi University, Punjab University and National Defense University, where Departments of Defence and Strategic Studies, International Relations and Peace and Conflict Studies exist.

(ii) Pakistani think tanks should carry out serious research into various aspects of the global commons. This research should inform the policy makers, political leaders, technology experts and the public at large.

(iii) Centres of excellence in maritime studies, space and air power studies, space sciences and technology studies and cyber studies must be established, at least, in all the provincial capitals.

(iv) Pakistan should do serious work in the maritime domain under provisions of UNCLOS and take appropriate legal positions in its EEZ boundaries and rights. All issues entailed must be resolved and settled without losing any more time.

(v) Pakistan should establish its Flag Merchant Marines and Passenger Sea Liners immediately in collaboration with the private sector.

(vi) Despite proven and widely acknowledged potential, civil aviation industry in Pakistan has regressed over the years. A friendly open sky policy should be implemented. Pakistan International Airlines may be privatized, and more airlines may be encouraged to expand the commercial aviation business in Pakistan.

(vii) Civil Aviation Authority of Pakistan must engage proactively and continuously with ICAO to secure, promote and manage Pakistan's aviation rights in all air space management proposals.

(viii) Pakistan should work with the international community and UNO to include over-flight of drones attacking targets in other states, in the category of illegal intrusion under the ICAO regulations.

(ix) In space, Pakistan must watch its interests in securing orbital spaces for geo-stationary as well as low-orbit vehicles. The frequency and bandwidth for satellite communications must also be reserved.

(x) Pakistan must endeavour to establish satellite launch and operate capability as soon as practicable.

(xi) In cyberspace, Pakistan needs to secure its civil, military and strategic networks and data links against cyber attacks and intrusions. The establishment of 'cyber command' as an independent tri-service structure should be pursued seriously.

Conclusion

The notion of the United States' command of the global commons is based on nostalgia of unipolar world. In the fast emerging multi-polar world, fixation with exclusivity over the commons is laden with great power competition and conflict. Any military conflagration due to struggle over access to or use of the global commons would indeed be tragic. The U.S./NATO argument that global commons are being threatened by other states and non-state entities, pre-supposes that the commons belong to the U.S. or NATO only. India, the so called rising great power, is bandwagoning with U.S. in the latter's bid to establish dominance over the commons. There is strong evidence that military exclusivity over the commons is causing tensions in the sea common. This is especially true of the South China Sea and the Arctic region. The air common is being used to attack targets in other states. This is a dangerous trend. In the space common, the spectre of militarization is increasing. In the cyber space, a warlike situation is actually prevailing which may escalate catastrophically.

In such a scenario, hope lies in strengthening the rule-based international access and use of the global commons by all nations. But, the international inclusiveness on the commons is being changed into exclusiveness of a few powerful nations. This smacks of intense military competition that could turn into a tragedy. Pakistan is little prepared to secure itself in this situation. It needs to grasp the issues and politics of the global commons, and make appropriate policies and strategies to secure its national security interests in the era of the second tragedy of the global commons.

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