India's Strategic Challenges in the Emerging Geopolitical Dynamics: A Case Study of Maritime Security

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India's aspirations to emerge as a rising global power can only be realized if it would be able to build a conducive environment in its neighbourhood. Both the external and internal environment of India are changing at a very fast pace in the emerging dynamics of geopolitics. India has been confronted with a number of strategic challenges including the threats emanating from non-state actors. There have been a number of internal security challenges having external dimensions such as the growth of Islamic fundamentalism, left-wing extremism and small arms proliferation. Narcotics trafficking is one such other concern impacting India's national security. The China-Pakistan nexus is a deliberate attempt to destabilize India. Pakistan remains a proxy for China, which poses serious challenges to India's stability. It must be emphasized here that the rapid technological developments have also kept India engaged in addressing the evolving vulnerabilities, especially in the information communication technology (ICT) domain. Despite these challenges, India's transformation and development is being witnessed by the rest of the world in general and China in particular. China aspires to be unipolar in Asia and hence, India's rise will not be in their interest. Unfortunately, China has not been able to understand that they would require to work with India closely if the twenty-first century has to be an Asian Century. Otherwise, the centre of gravity will never get shifted from the West to the East. The United States and the Western Hemisphere will keep continuing as the Centres of power. The balance of power will never get tilted towards Asia. India and China should not be seen as rivals but as an important poles in Asia, which can reflect their potential to assume the responsibilities to lead world affairs. Though, it looks as if finding composite solutions would remain

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a distant reality but there is no denying the fact that China sooner or later will understand the geopolitical situations and the need for embracing India for the larger interests of global peace and stability.

China Factor on India's Radar

China poses a serious strategic challenge to India especially in realizing its strategic goals to be seen as a responsible player in the international system. The battlefield of the future is going to be completely different and complicated because of the fast-changing nature of the threat. The concept of physical warfare slowly and steadily will get diminished from the lexicon of International Relations. The concept of war and conflict in geopolitics mainly centres on acquiring a distinct capability by a country for remaining invulnerable from the asymmetric conflict point of view. The major strategic challenge for India will remain in the field of the threats impacting the protection and security of critical infrastructures such as the power grid, nuclear command and control, banking and finance and railway network. The criticality of these domains cannot be ascertained in absolute terms. But China certainly will keep trying to maximise its strategic advantages through its edge in the field of information communication technology (ICT).

The emerging situations in most of the countries of South Asia suggest that China's increasing penetration has been encircling India, which could prove negative to India's overall interest in the emerging global order. Such China's encirclement of India strategy has already impacted negatively for the building of a new conducive strategic environment. Threats will keep emanating from the China-Pakistan nexus with a single-minded aim that India is completely embroiled in addressing these threats so that India's rise is contained. China finds India to be a contender and strongly believes in becoming a unipolar power in Asia in a multipolar world. Containment of India's strategy perhaps would remain the top priority on China's radar.

Unless India and China together find a composite solution to all their major irritants, they will be seen as competitors and rivals. It will serve the purpose of both the West and the United States. The antagonistic posturing in Sino-Indian relations will never witness the shift of the centre of gravity from the West to the East. India, on the one hand, would require to handle China deftly and on the other, it needs to mobilise China in its favour and that would create an environment ushering into peace and stability as well as the shift of the centre of gravity will be faster. Otherwise, the twenty-first century will never become an Asian Century.

The rise of China will remain the core issue in the emerging trends in international relations. It certainly has the potential to alter the power equations. But, without India's support and help, it cannot meet its aspirations. The challenge of rising China though will remain a critical element in the foreseeable future for the larger interests of the members of the international community. China's conciliatory words always remain a rhetoric and is also contradicted by its actions. The opacity in China's actions is a part of the problem.

China's overwhelming concentration on fulfilling its own interests without regard to international rules and adherence to the legal principles has negative consequences in every part of the world. In recent times, China's hard-line stances vis-a-vis India, Taiwan and the United States has enhanced the fears of China changing the status quo. China's sensitivity regarding its sovereignty over "Tibet" has been described by almost all the Chinese leaders as their core interest just after "Taiwan". US House Speaker Nancy Pelosi's recent visit to Taiwan has been perceived as a provocative gesture and China has been flexing its muscles since then.

China also appears to view India's growing bonhomie with the United States as a threat. It is only because China's aspirations to be seen as the "hegemon" of Asia may become difficult. The United States despite its decline will remain the most technologically, economically advanced and militarily powerful country in the world. There seems to be a quantum shift in the bilateral approaches of India and the US. Now, it is appearing as if there are more convergences and virtually only a few divergences on global pertinent themes where both India and the US have been engaging with a lot of sincerity for bridging the gap. India has reflected its strategic autonomy in the decision-making process as an assertion of growing India's strengths.

The strategic challenges being confronted by India are diverse in nature. Among all the existing global commons such as outer space, cyber and maritime domains, it is perhaps challenging for maritime security, which is gaining momentum in all the major geopolitical discourses.

India's Maritime Security

The strategic challenges in the maritime domain are going to be complex in the emerging geopolitical reality. It has become complex only because the maritime domain in the current context is being seen as a part of the challenge for the international system and how the major powers including India would be able to converge and cooperate in the foreseeable future. The debates on

the Indo-Pacific region in the maritime domain have been gaining momentum. There seems to be a serious move by the United States to re-balance its Asia strategy and maintain its sphere of influence across the Indo-Pacific region. The Indian Ocean dimension of America's Pacific rebalance is critical to its Pivot strategy.

The Indo-Pacific region is being perceived as an engine of global growth. Hence, the onus lies on the major powers to make the environment conducive so that the region is not only economically secured but also peaceful and stable. In this regard, cooperation seems to be the viable option among the nation states in the periphery of the Indo-Pacific region. How India can take the lead in forging cooperative security and partnerships with East Asian counterparts in particular in making the whole region stable, secure and prosperous will remain one of its priorities. Undoubtedly, China being the leading power in East Asia would require finding a balance between its strategic aspirations and stability in the region.

Over the decades, the Indian Ocean region has been heavily militarized and such militarization will continue to adversely affect India's economic, political and military interests. The seas adjacent to India remain highly vulnerable from India's national security point of view. There has been an increase in China's strategic footprints in the Indian Ocean region despite India's advantages – forty percent of Indian Ocean waters is under India's ambit. Moreover, the US has been operating nuclear-powered submarine armed with long-range land attack missiles in the Indian Ocean region. Diego Garcia is located adjacent to India's seabed mining area.

It must be emphasized here that some of India's maritime boundaries are not well defined. However, as the twenty-first century progresses, the Indo-Pacific theatre is experiencing an unprecedented transformation involving economic development, military build-ups, political reforms and technological advancements. In an age of globalization, the Indian Ocean contains massive half of the world's container traffic. Indian Ocean Rim land from West Asia to Pacific accounts for seventy percent of the traffic of petroleum products for the entire world. The energy needs at the world level are likely to increase by fifty percent by 2030. Almost half of this will be needed by India and China. It is estimated that by 2050, India is likely to overtake Japan as the third largest consumer of energy.

The Indo-Pacific region has emerged as a new maritime geopolitical construct where a number of countries have been competing for gaining strategic advantages. The changing pattern of economic power and political

influence would give rise to new strategic equations. The maritime domain has also witnessed a large number of disputes in addition to increasing militarization and nuclearization.

India has categorically mentioned on several platforms that its security interests cover the area from the Straits of Hormuz to the Straits of Malacca. India's recent efforts to strengthen its naval power with a specific reference to the Indian Ocean have reflected its change of style if it is not of the actual policy. There are a number of choke points in the Indian Ocean region including the Straits of Malacca and Singapore Straits, which technically link the Indian Ocean to the South China Sea and the Pacific Ocean. It provides the shortest sea route from the Persian Gulf to East Asia and West Pacific regions. It is a strategic choke point in the IOR. There are roughly 80000 ships that transit these Straits every year. Hence, the protection and security of sea lanes of communication become a global responsibility. More importantly, India's stakes are very high because of its complete dependence on Seaborne trade.

The protection and security of the Strait of Hormuz is again equally important because it connects the Persian Gulf to the Gulf of Oman and the Arabian Sea. It remains a critical choke point. Around twenty million barrels of oil pass through this Strait each day. It represents roughly forty percent of the world's oil trade by sea. The energy security of many nations including India will get severely impacted if there is a closure of this Strait.

India has a vast maritime neighbourhood which extends across the IOR. Hence, there are a number of challenges emanating from the changing dynamics of geopolitics where one experiences the threats emanating from a combination of both the state and non-state actors. Maritime relations with the nations in India's extended neighbourhood have become a part of the preferred strategy mainly to overcome the emerging strategic challenges in the maritime domain. India's "Act East" policy has been mainly enunciated to expand India's engagement and relations with its East across the Indo-Pacific with an emphasis on economic and security cooperation.

India also launched "Project Mausam" in 2014 to renew the cultural links and contacts among countries in the Indian Ocean region. It has projected the vision of "SAGAR" – Security and Growth for All in the Region in 2015. It mainly emphasized strengthening economic relations and development in the Indian Ocean region.

India adheres to all the existing international laws and norms for pursuing maritime relations and resolution of maritime issues between nations. Though there are instances where some states have got no regard for the established

legal regime and hence, the risks of maritime instability and insecurity could arise and that would pose a lot of challenges for maritime security. Such action may lead to a negative impact on the Indian economy.

The maritime economy remains vital because it covers a wide range of economic activities related to a number of areas, which require to be protected and secured from any eventuality whether it arises from the state actors or non-state actors such as coastal infrastructure, ports, seaborne trade, offshore energy assets, undersea pipelines and cables and seabed resources.

India's energy security will remain completely dependent on the seas. It is nearly eighty percent of India's crude oil requirement that is imported by sea across the Indian Ocean. Another eleven percent of India's crude oil requirements are met from offshore energy sources within the Indian EEZ. Offshore gas fields also contribute to eighty percent of India's domestic natural gas production. If one takes into account the total oil imports by sea, offshore oil production and petroleum exports, the country's cumulative "sea dependence" for oil is estimated to be about ninety percent.

India's dependence on the sea will keep continuing. More than ninety percent of India's international trade by volume and over seventy percent by value is carried over the seas. Hence, how India will have to contain maritime threats should form a part of the maritime strategy. The challenges become immense for India from the unregulated activities at the sea. A large part of the maritime domain comprises the high seas, which are outside the jurisdiction of any single state or authority. The unregulated activities at sea especially by non-state actors will have negative consequences because they could turn against good order at sea and harm the security interests of others. This is the reason that India's security strategies rely on both deterrence by denial and deterrence by punishment.

India's Threat Perception

India faces multiple and complex threats and challenges to its security from the land, sea and air. The articulation and analysis of India's threat perception will reflect its national security challenges. Undoubtedly, the concept of national security is nothing but a function of a country's external environment and the internal situation and how they interplay with each other. The external environment is influenced by the emerging features of international order and prevailing security challenges. The internal situation encompasses many aspects of national power and national character ranging from law and order to economic development and whether there is a challenge to national cohesiveness.

The emergence of non-state actors and their impact on global peace and stability in general and India's national security in particular have thrown open a number of challenges. India is likely to remain a target of international terrorism in the future. The state-sponsored terrorism, which seems to be highly motivated by fundamentalist ideologies, backed by secretive but efficient financial networks, use of information technology, clandestine access to chemical-biological and nuclear materials and illicit drug trafficking has emerged as the major source of concern for India. India requires to evolve strategies to counter the threat of "Weapons of Mass Destruction" terrorism and cyber-related threats. The cyber-related threats are emerging as deadly challenges because it impacts critical infrastructural networks and economic assets such as banking, power, water and transportation sectors.

India's defence preparedness needs to be understood in the context of emerging national security challenges. Strategic situational awareness will require gathering and correlation of information obtained at all levels and its analysis which would help in developing the strategic picture. The Maritime Domain Awareness (MDA) again is an all-encompassing concept, especially from India's maritime security preparedness point of view. It involves comprehensive understanding of the intentions of all actors and in all dimensions – on, over and under the seas. The MDA in the technical sense is assessed and developed by the Indian Navy based on both individual efforts and inputs from other agencies. This is the reason the Indian Navy has been enhancing coordination between all the national maritime stakeholders, including the Indian Coast Guard, Indian Air Force, Central and State maritime agencies and national intelligence agencies.

Critical Role of Technology

Collection of intelligence has historically been of great importance for national security. The methods of collecting intelligence have changed significantly over the years. It is no more limited to human intelligence. The expanse of intelligence gathering methods has by and large shifted to the use of technology. These technological capabilities ranged from an early – and not particularly successful – use of camera – carrying weather balloons snapping pictures at random, to those current collection practices (e.g., photo-reconnaissance satellites), known technically as National Technical Means (NTM) of verification in the United States' parlance. The NTM has been in the practice for decades in gathering intelligence.

There has always been a quest to find out the enemy's plans and moves

well in advance in order to develop one's own operations effectively since the early days of warfare. In other words, domination of the high ground was sought which gave a commander knowledge of the enemy's strength and disposition. This has become very complex in the existing environment where sophisticated technologies have been invented and used for this purpose. These needs provided an impetus to produce the radar. Undoubtedly, radar has the effect of forcing air operations down to lower levels to stay below the radar horizon and thus helps in evading detection. The advances made in the field of science and technology have warranted a number of nation states including India to prioritize the use of various technologies for intelligence gathering.

There is a deep correlation between the interrelated nature of technical intelligence systems and national security. The dynamic international security environment warrants India to build a network-centric mechanism, which would collect reliable, accurate and if necessary continuous information on the situation. The reliability and the analysis of the information collected with the help of technology is the key for any decision maker during a time of crisis. It must be pointed out that efforts to emphasize the technologies for intelligence gathering in the Indian context have been very positive and significant development. India faces multiple and complex threats and challenges to its security from land, sea and air. India's most immediate threat comes from Pakistan. The intensification of cross-border terrorism in recent years has thrown up new challenges for the intelligence communities. The dynamic nature of the problems concerning the management of borders demands various surveillance and intelligence technologies in place for protecting India's national interests.

It is generally believed that Sino-Indian relation is not on a high pitch. India has a long-standing border dispute with China and all of it is in the mountainous regions. China has occupied a large chunk of India's territory and also has an outstanding claim in Arunachal Pradesh. It seems that China has been attaining its objective of creating internal disturbances in India through Pakistan and Nepal. The Chinese intentions and behaviour across Indian borders have not been very friendly. Against this backdrop, providing intelligence across the Sino-Indian borders through the help of surveillance and intelligence technologies becomes an urgent necessity. The adversarial relations with China and Pakistan have always been unstable and it requires comprehensive intelligence on the motivations – intentions of China and Pakistan in order to discern their plans and actions across the borders.

Information Assurance, Information Dominance and Data Fusion

The emergence of network-centric world has made the nation-states highly vulnerable. New information technologies arrive at lightning speed, allowing us to share information across town, across the country, or around the world faster than ever before. It must be emphasized here that information assurance and information dominance are the key to the current international security environment. The other important area has been relating to data fusion – the combination of data from various sources into intelligence information needed for decision-making. It must be stressed that India requires achieving mastery in data fusion. Fusion is the process through which one brings together multiple data on a single issue collected from persistent surveillance and reconnaissance and then combines and transforms multi-source data into intelligence necessary for decision-making. The core concept is the combination and transformation of multi-source data into an integrated information product, that is, the creation of a single, integrated, analysed "intelligence picture" from data supplied by various sensors and other sources.

"Intelligence" Technologies for National Security

It must be pointed out here that many advances have been made in the field of intelligence, surveillance and reconnaissance (ISR) capability. The ISR capability of any nation requires adequate sensors and reporting technologies associated with intelligence collection, surveillance and reconnaissance. The surveillance and the reconnaissance of the adversary both during war and peacetime are important aspects of military preparedness and form an essential part of strategic and tactical planning.

The concept and techniques of surveillance and reconnaissance, which have evolved primarily around technological advances in the areas of sensors and platforms, are of great significance from the point of view of any country's national security. It must again be emphasized that there has been certainly a revolution in the area of computers, information technology, processing and networking and such revolution has impacted the way information is now being collected, collated, disseminated and used to achieve rapid and precise responses in the battlefield during the war.

The information is also being received from different sensors working in different domains/platforms/frequencies and collated manually, the technological advances would now permit the fusion of imagery and data from several different kinds of sensors such as radar, infrared, and other

electronic intelligence sensors, in space, aircraft (e.g.; AWACS), UAVs, ships and in ground facilities (e.g., ground battery radar/ASTOR) and supplemented by other wider array of sensors scattered on the terrain providing a comprehensive picture of the battlefield to the commanders and decision-makers.

Sensors for National Security

The trends in the advances in science and technology suggest that over the next twenty years the various data streams produced by the sensors would be networked, merged, and intelligently fused to be able to receive more information faster and in greater detail. The potential of integrating the various elements of intelligence gathering systems, information processing systems and weapon systems exist in a number of countries and it may be required to be streamlined in India's context.

Surveillance sensors operating over a wide spectrum of frequencies form the front end of the integrated surveillance system. It is the key to intelligence gathering. Developments in the field of following sensors have changed the strategic discourse among the members of the international community as far as intelligence gathering is concerned:

- Image Intelligence Sensors (IMINT)
- Signature Intelligence Sensors
- Measurement and Signature Intelligence Sensors
- Aerial Photography – Optical, Infrared, Stereoscopic, Multispectral
- Electro-optical Devices (Electronic Still Camera, Radar, SAR, LiDAR)

Developments taking place in the field of sensors worldwide have posed challenges to a number of countries including India. There will certainly be the need and relevance of these sensors for Indian requirements in the field of intelligence gathering. The role of signal intelligence in gathering intelligence, in particular, is gaining momentum. The information is collected through the interception of radio waves. These are very crucial during both peace and crisis times.

There is no doubt in saying that a wide variety of sensors are available in the international market that can provide high-resolution images from different platforms operating on the ground, as well as in the air and space. Electro-optic sensors operating in visual and infrared wavelengths have always been synonymous with the term IMINT sensors. Many of these sensors are used

in surveillance platforms such as manned aircraft and UAVs to provide real-time situational awareness information, which becomes a crucial part of the decision-making during the case of any eventuality.

Development in the field of Synthetic Aperture Radar (SAR) has made intelligence gathering easier. So far, it is the only all-weather sensor that can provide surveillance and intelligence information during day or night. These radars are also capable of providing high–resolution images at long ranges.

Technological Advances in Image Analysis

Image analysis has become the key in terms of getting to know about the adversary's capability. The imaging methods have received the widest attention in terms of intelligence gathering. Intelligence acquisition through imageries has been one of the non-intrusive means of gathering information.

It must be pointed out here that the technological advances made in the image analysis capability have helped many countries in assessing their adversary's intentions and behaviour across the border. The satellite imagery and the gradual improvement in their resolution have changed the landscape of the analytical capability of the researcher working in this field.

Emerging Scenarios

India in the current context requires strengthening its sensors capability by pursuing defence research and development. It is generally believed among the members of the strategic community that the imported technologies and systems for India would be highly vulnerable. India must strengthen its R&D labs working on a number of sensitive areas including sensors technology.

The participation of private industry in strategic sectors and the creation of public-private interface should be promoted at all levels of defence research and development. India shall learn the lessons from the United States' private enterprise and how they have been a great source of augmenting research and development in strategic sectors.

The time has come for India now to promote the related science and technology required for intelligence gathering. The following areas need a greater focus in the current international milieu:

- Cryptoanalysis; Cryptography;
- TECHINT Interpretation and Analysis;
- Biometric and Biotech Mapping; and

- Sciences relating to the detection, defusion of explosive substances and devices

India will require to drive and augment its capabilities in related research and development and then it would be able to harness the potential of various technologies for intelligence gathering, which in turn will help in evolving an effective strategy to deal with the strategic challenges of varying nature. The larger maritime security construct called the "Indo-Pacific Region" will pose a greater strategic challenge in the foreseeable future because of greater power rivalry and hence India would require to get prepared to deal with any eventuality.

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