The Role of Submarine Forces in Balancing Geo-strategic Equations in the Indian Ocean

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Abstract: *The foreign policies of the USA and those of China appear to be based on an implied aspiration to an uni polar world. The resulting tensions call for careful management to avoid conflict that may dislocate the global developmental process. Strategic access to the potential inherent to Sri Lanka - which straddles important maritime routes, has the world's largest natural harbor and functions as the centre inking the IORA, SAARC, BIMSTEC and ANTARCTICA - will play an important role in the management of such tensions. Balancing global geo-strategic relations through the adoption of sound foreign policies, strong international relations and clear strategic defences while facilitating economic and technological competition, collaboration and cooperation is essential for peace and development and is of particular interest to the islands human inhabitants.*

During the Second World War, German "U" boat operations played a significant offensive role that required dedicated resistance in order to be contained and overcome. Submarine forces continue to generate strategic uncertainties that have the potential to generate tensions and increase resource consumption unless effectively engaged, creatively managed and structurally and procedurally contained. Submarine forces of several nation states operate and interact with each other within the Indian Ocean. These same nation states compete with each other for resource extraction and for access to manufacturing capacity and service delivery in the region. The balancing of geo-strategic equations within the Indian Ocean is therefore essential to ensure access to such resources, manufacturing capacities and services.

This paper addresses the specific questions: How will submarine forces impact the distribution of power in the Indian Ocean Region? What impact will submarine forces have on peace and stability in the Indian Ocean Region? And what is the specific role that Sri Lanka should play in balancing regional geo-strategic equations?

The paper quantitatively analyses distribution pattern of submarine forces referring Jean's Fighting Ships 2008-2009 and qualitatively discusses observed movements of submarine forces in Indian Ocean Region in order to identify and articulate elements that may be considered in the generation of an Indian Ocean Treaty Organization (IOTO) that balances geo-strategic relations within the Indian Ocean.

Keywords: Sri Lanka, Indian Ocean Region, Submarine Forces

I. INTRODUCTION

A. Global Perception

Historically a tendency towards the integration of large areas of territory and their populations under a single perceptual paradigm, generating a single set of operational principles with a concomitant system of technologies and belief, through alliances, subterfuge, and subversion and through forceful subjugation can be observed. The centre of this centrifugal dynamic has been occupied by different structures and states at different times. The movement itself however has been constant with varying strengths and success at varying times with an overall tendency towards increasing success despite strong resistances and coordinated disruptions. The centre of this movement is currently occupied by the United States of America and its allies and sympathizers with their scientific method and the technologies it has generated and their systems of process rather than personality driven governance and management bound by a set of principles codified in a document known as the Universal Declaration of Human Rights that they claim to enforce and defend in order to ensure that all *Homo sapiens* may exercise and enjoy them while preserving, expressing and developing their diverse cultural heritage.

Their scientific method has exposed the unsustainable nature of the current civilization of the species *Homo sapiens* and its inherent threat to its own continued survival and has consequently secured the commitment of the species to the transformation of this civilization into a sustainable and resilient one, driven towards clear objectives by planetary guidance systems based on inclusiveness, equity and forward vision.

B. Study Area

The Indian Ocean (IO), the third largest ocean in the world, occupies approximately 20 percent of the Earth's sea surface, covering a total area of 73.56 million square miles. It is bounded to the north by the Indian subcontinent; to the west and northwest by the east African coast and Arabian Peninsula, respectively; to the east by Thailand, the Malay Peninsula, Indonesia, and Australia; and to the south by the oceanic margin with the Southern Ocean at latitude 60°S, the northern limit of the area covered by the original Antarctic Treaty 1959 (Michel & Sticklor, 2012).

According to the results of the world population 2015 revision, the world population reached 7.3 billion as of mid-2015 and 60 percent of the global population lives in Asia, 16 percent in Africa. In the time frame of the 2030 Agenda for Sustainable Development, the world population is projected to increase by more than one billion people, reaching 8.5 billion in 2030. In 2015, the two largest countries, China and India, are home to 19 and 18 percent of the world's population, respectively. By the early 2020's India is projected to overtake China as the world's most populous country, and the major part of future population growth will occur in Africa and Asia. More than half of global population growth between now and 2050 is expected to occur in Africa (Department of Economic and Social Affairs, 2015). The total human population of Indian Ocean Region (IOR) states is 2.7 billion and amounts to 36 percent of the estimated planetary population of the species *Homo sapiens*.

Travel across the IO and passage from its waters into neighbouring seas is both facilitated and potentially constrained by chokepoints. The seven key chokepoints in the IOR are the Mozambique Channel, the Bab el Mandeb, the Suez Canal, the Strait of Hormuz, the Malacca Straits, the Sunda Strait, and the Lombok Strait. On land the IOR is bounded and variously influenced by 38 states: Australia, Bahrain, Bangladesh, Comoros, Djibouti, East Timor, Egypt, Eritrea, India, Indonesia, Iran, Iraq, Israel, Jordan, Kenya, Kuwait, Madagascar, Malaysia, Maldives, Mauritius, Mozambique, Myanmar, Oman, Pakistan, Qatar, Saudi Arabia, Seychelles, Singapore, Somalia, South Africa, Sri Lanka, Sudan, Tanzania, Thailand, United Arab Emirates, and Yemen. France and the United Kingdom can also be counted among the IO littoral states because of their island territories. Combined, these countries make up almost 40 percent of the world's total coastline, dominated in order by Indonesia, Australia, India, Madagascar, Malaysia, Thailand, Somalia, South Africa, and Saudi Arabia (Michel & Sticklor, 2012).

C. Justification

The IOR represents an increasingly significant platform for agriculture, resource extraction, manufacturing, services and global trade. Significant volumes of investment are likely to flow into this region to finance these activities that are essential for the day-to-day maintenance of the well-being of the global population of 7.3 billion *Homo sapiens*. The rising prosperity in Asia, growing dependence on natural resource flows linking producers and consumers across the Middle East, Africa, and Asia, and globalized supply chains and distribution networks are knitting the region ever more closely together by sea. At the same time, emerging problems ranging from piracy and territorial disputes in the regional seas to global environmental pressures on coastal and marine resources pose significant governance challenges for maritime policymakers around the IOR (Michel & Sticklor, 2012).

The smooth flow of investment capital into this region and the smooth flow of raw materials, goods and services out of this region to global markets demands the balancing of geo-strategic equations as they impact the IO and the nation states along its shores. This analysis and the recommendations based thereon will contribute towards the conceptualization and implementation of processes and structural mechanisms that will help balance these equations.

D. Strategic Factors of Indian Ocean Region

The strategic factors generated within the IO by the current global context generated by the developmental

activities of the species are those of: security and freedom of movement of resources, India consolidating its position as the regional power of South Asia, China's consolidation of its position as the regional power in South East Asia, China's increasing competition with the USA and its allies for greater global power and access to resources, rivalry between India and China for resource extraction in the IO, nuclear power imbalance of India and Pakistan, the impact of possible changes in the strategic relationship between India and the US, the impact of disasters on strategic capacity, limitations of perceptual capacity required to balance regional geo-strategic equations, political constraints and the consequent need for mass perceptual modification in order to balance these equations, relative strength of surface and submarine Naval Fleets, Air force and Ballistic Missile Capacities, Civil and military interfaces for the joint exercise of power in operational deployments and the possibility of a strengthening of ongoing attempts to change the principles underlying the centre of the integrative centrifugal dynamic leading to an abandonment of process governed governance in favour of governance by personality and arbitrary diktat.

The Hague Centre for Strategic Studies 2010 paper argued that the IOR strategic issues that can rapidly escalate is the instability of the petroleum exporting states. The forms of military clash that would affect the flow of petroleum to the east though the straits of Malacca, India- Pakistan conflict that could include a serious Air-Sea conflict or even escalate to nuclear warfare, Conflict and tension between India and China as regional rivals to the north of the IOR and low level clashes that occur periodically in the Sichuan Glacier area, the struggle for influence between the US and China, the limited naval-air build up in various parts of the rest of the region, the risk of terrorism, the struggle between religious and secular rule, endemic transnational and maritime disputes and potential conflicts and disputes relating to offshore resources.

E. The Problem: The Impact of Geo-strategic Equations

During WW II, the US Navy developed a strategy and doctrine to combat the German U-Boat threat in the Atlantic Ocean. However, this occurred reactively after an enormous quantity of US and British merchant vessels were sunk by the U-Boats (Keeter, 2004).

In the 1950s, the US Navy codified a three prong strategy to contain and reduce the Soviet challenge to the global supremacy of the USA: develop the capacity to strike submarine bases and shipyards in the USSR, intercept and destroy Soviet submarines as they sorted from their bases, and develop a strategic nuclear weapon delivery platform. The last two depended upon the development of nuclear powered submarines that could operate submerged "indefinitely" (Keeter, 2004).

The collapse of the Soviet Union had the unintended consequence of allowing the proliferation of advanced submarine technologies to occur. Russia and other former Warsaw Pact countries sold their most advanced technologies around the globe with little thought or care to the shifting balance of power these sales precipitate. Even traditional US allies have contributed to proliferation by selling weapons and sensor systems to the highest bidder (Keeter, 2004).

The US Navy believes that the submarine will remain the premier Anti-Submarine Warfare (ASW) asset for the feature (Keeter, 2004). This is because submarines have been and are likely to remain the weapon system with the highest leverage in a battle for control of the ocean surface. No other individual platform can compare with a modern submarine, whether nuclear or non-nuclear, in its ability to combine a potent offensive push with the ability to evade counterattack by opposing forces (Cote & Sapolsky, 2009). This 21st Century US Navy ASW Concept of operations is intended in the near to maximize their undersea advantage anywhere in the world to secure the battle space from undersea threats by swiftly destroying enemy submarines (US Task Force ASW, 2015).

Today, the resource rich IOR is in the midst of a major geo-political struggle that may be viewed as a continuation of the 'Great Game' played out by the British government in south and central Asia (De Silva-Ranasinghe, 2011) which has seen increasing resistance to the centrifugal core arising in response to its compensatory centripetal force that affects its peripheral areas. In most cases this resistance is expressed through attempts of regional powers to dominate smaller states and form alliances. Such alliances may not reject the dynamics of the centrifugal dynamic of global civilization or may take the

form of an aggressive rejection of the global trend of civilizational development couched in nationalism and based on claims to the resurrection and reestablishment of past civilizations imagined as being preferable to the currently global civilization. In such situations claims are often made to a sovereign right to reject global norms and principles, territorial seizure by non-state structures and attacks on supply chains and the engaging in of illegal activities by forces marginalized by their rejection of global norms and principles such as traffickers of people, arms, drugs and other elements, pirates, terrorist movements and armed campaigns for national liberation session or self-determination (De Silva-Ranasinghe, 2011). The 2011 Failed States Index indicates that 11 out of the world's 20 most unstable states are located in the IOR.

II. OBJECTIVES

To understand how submarine forces may impact the distribution of power in the Indian Ocean Region, what impact submarine forces may have on peace and stability in the Indian Ocean Region and what specific role Sri Lanka should play in balancing regional geo-strategic equations?

III. METHODOLOGY

When analysing the capabilities of submarine forces, details of submarine displacement and structure, main machinery and speeds, torpedoes and missiles, weapon control systems and countermeasures, sensors and modernization are important parameters to be analysed. However research focused on collecting data of number of submarines sustained by individual nation states and analysing them as regional powers of IOR and global powers and conducted trend analysis of submarine forces deployed at global level, IOR and China. Further study analysis trend formation of global SSBNs which seems to be the most lethal and inconspicuous killing machine which has originated though modern maritime warfare frontiers. Jane's Fighting Ships 2008/2009 was used to collect the data on submarine forces. Finally first hand research publications were utilized to analyse submarine deployments and observed movements which can create strategic deterrence within the IOR and globally. The role of submarine forces in peace and stability and how Sri Lanka can assist in the balancing of geo-strategic equations in the IOR was examined.

IV. ANALYSIS

The four main types of submarines are the Diesel-Electric Attack Submarines (SSs and SSKs), Nuclear Powered Attack Submarines (SSNs), Guided-Missile Submarines (SSGNs), and Ballistic Missile Submarines (SSBNs). They are differentiated by their primary armaments and propulsion systems (Eaglen and Rodeback, 2010). Apart from these the Diesel-Electric Cruise Missile Submarine (SSG) and Diesel-Electric Powered Small Coastal Submarine (SSC) are also taken into conventional submarine categories. When analysed it is seen that submarine capabilities are present in 38 countries. 28 countries possessed only SSKs. North Korea scored top rank in conventional powered submarines with 23 SSKs and 32 SSCs. Japan had 22 SSKs, Turkey had 14 SSKs, Germany had 13 SSKs, Greece and South Korea had 12 SSKs. Apart from that the US, UK and France had only SSNs.

Six countries can be highlight as per their capabilities in descending order Russia with 22 SSKs, 22 SSNs, 9 SSGNs and 18 SSBNs. U.S. with 59 SSNs, 4 SSGNs and 14 SSBNs. China with 26 SSKs, 6 SSNs, 29 SSGs and 5 SSBNs. UK comprised with 13 SSNs and 4 SSBNs. Finally India the only country with nuclear powered submarine in the IOR with 22 SSKs and 2 SSBNs.

When the submarine capabilities if Indian Ocean States are analysed ten countries have SSKs and only India has SSBNs, when summarizing the descending order of submarine power in IOR, India 22 SSKs and 2 SSBNs, Iran has 10 SSKs, Australia and Singapore have 6 SSKs, Pakistan and Israel have 5 SSKs, Egypt has 4 SSKs, South Africa has 3 SSKs and Malaysia and Indonesia have 2 SSKs. Further Bangladesh, Myanmar and Thailand are in highly possible state of adding submarine forces for their fleets.

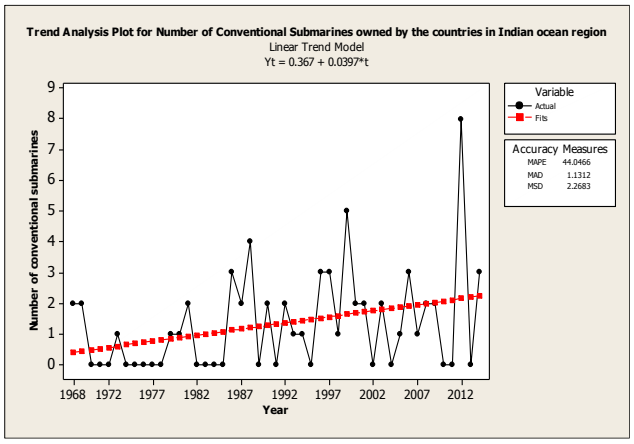

Figure 1. Trend Analysis of Conventional Submarines (SSK) in Indian Ocean Region

There is a positive trend of purchasing conventional submarines (SSK) in the IOR countries within the period of 1968-2012. Linear trend model was fitted to the data set and observed an increasing trend of the dependent variable with a coefficient of 0.039. Mean absolute error of the fitted trend line is 44% and Mean absolute deviation is 1.13. Mean squared deviation of the filled line is 2.2.

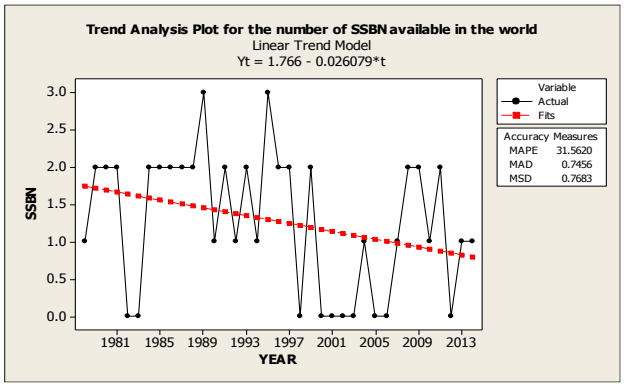

Figure 2. Trend Analysis of ballistic missile submarines (SSBNs) in the world

According to the trend analysis there is a decreasing trend in number of SSBN possessed by different countries in the world. Data for last four decades (from 1981 to 2013) was used for the analysis. The coefficient of the trend line is 0.026 and the intercept is 1.76 Mean absolute percentage error of the fitted linear model is 31.56 and Mean absolute deviation is 0.756.

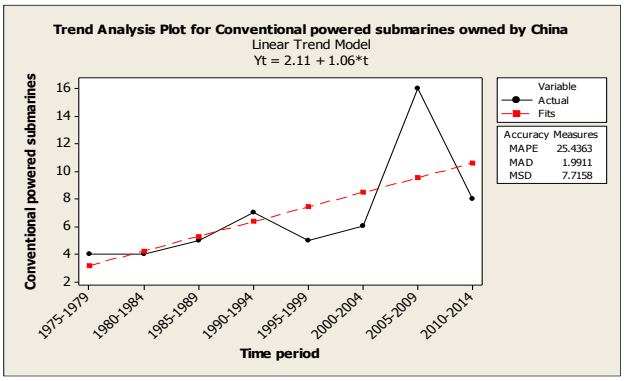

Figure 3. Trend Analysis of Conventional Submarines (SSK) in China

Number of conventional powered submarines owned by china with in the period of 1975-2014 indicates an increasing trend with the time. The coefficient of the fitted line is 1.06 and the Mean absolute percentage error of the fitted linear model is 25.44 and Mean absolute difference is 25.43.

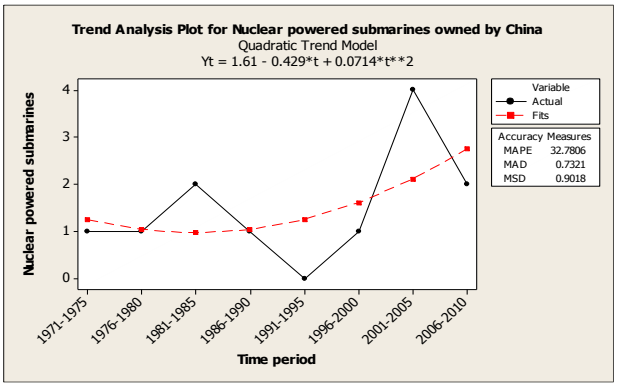

Figure 4. Trend Analysis of Nuclear Powered Submarines (SSN) in China

There is an increasing trend in number of nuclear powered submarines owned by China with in the period of 1971-2010. Quadratic trend model was fitted to the data and Mean absolute percentage error of the model is 32.7 and the Mean absolute deviation is 0.7321.

V. DISCUSSION

The distribution of power will be determined by the ability to control choke points and to attack maritime vehicles of all sorts on the open waters of the IO. In the absence of a collectively generated institutional framework an

escalating process of cultivating the capacity to do so is likely to continue. This capacity will be determined by the type of submarines and available strategic skill of commanders at the disposal of any given nation state at any given point in time. The access to satellite data will also contribute significantly to this capacity.

Possessing an SSBN gives India a hidden, mobile platform armed with Intercontinental Ballistic Missiles (ICBMs). Unlike land based ICBMs it is difficult to locate and destroy submarine ones, since submarines are mobile, can remain submerged while travelling and can take cover in submarine trenches and other bathymetric features. Any hostilities with India will unleash a hunt for submarines that will affect all other countries in the neighbourhood as well and draw on scarce resources causing economic distortions and affecting the physical quality of life in the region. A tendency to balance forces by balancing land troop size with ICBMs cannot be avoided and her SSBNs give India a clear supremacy in this respect. Other nations with submarines can either aid the activities of India or seek to disturb them. Both actions will generate tensions and demand increased expenditures. Competitors may also seek to acquire SSBNs to build their own ICBM platforms. This may be accompanied by an increase in the acquisition of attack submarines and submarine surveillance equipment as well as missile defence systems in response to the threat of submarine based ICBMs.

Nations using resource that have to transit the IO as well as the global distribution of goods and services manufactured in the region therefore require guarantees that the shipping lanes that they use for this purpose are not disrupted for any reason.

VI. RECOMMENDATIONS

There is a clearly evident need for an international treaty subscribed to by all nations using the maritime routes that cross the IO, an Indian Ocean Treaty under which all of them will contribute towards and collaborate with each other in order to maintain a collective presence in the Indian Ocean in order to:

1. Ensure free movement of their vessels and cargo.
2. Prevent criminal activities and operations.
3. Ensure that the provisions of international maritime law prevail.
4. Ensure that submarines and other naval vessels observe clearly defined protocols when approaching or transiting the Indian Ocean.

VII. CONCLUSION

Submarines are expensive weapons that can cause suffering, death and destruction. Their deployment is usually justified on the grounds of their alleged capacity to deter adventurous initiatives and as a defensive force in the event of a conflict. However in the future they may be used to deny access to resources. Therefore access to resources may soon become the primary problem underlying the need for submarines and the need to balance their forces.

What is therefore required for the future is a Strategic Resource Allocation Initiative (SRAI) led by Sri Lanka by virtue of its geostrategic location. This initiative will have to effectively engage the Indian Ocean Rim Association (IORA), South Asian Association for Regional Cooperation (SAARC), The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) and the Antarctic under which resource allocation is planned and regulated and defended by a Joint Task Force.

The emergence of Sri Lanka as an entrepot through which capital flows into these regions via a regional ISBAC (IORA, SAARC, BIMSTEC and ANTARCTIC COLOMBO) stock exchange and finished goods, services and resources are transhipped to global markets via its sea and air ports, as a platform housing the strategic function of the global developmental process, as a centre linking the IORA, SAARC, BIMSTEC and ANTARCTICA, as a location for regional corporate headquarters and centre for the housing and development of the advanced human resource required to manage the developmental process in these regions will burden the island with the responsibility of ensuring that such a SRAI is initiated and sustained. This will necessitate its engagement of global powers at regional level and the generation of several mechanisms including the ISBAC Regional Stock Exchange and a Humanitarian City at Hambantota (Hambantota Humanitarian City) that brings supply chains together with advanced human resources and logistical support to form

a confluence that supports disaster management and risk reduction processes throughout the regions linked by the island and several megapolises in the islands metro regions designed to house the advanced human resources required for the management of the developmental process.

The security of this complex that is emerging on this island demands the establishment of an Indian Ocean Treaty Organization (IOTO) as a mechanism to balance the geo-strategic equations in the region and ensure the security of these massive investments and the advance human resources required to manage them.

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ACKNOWLEDGMENT

I hereby acknowledge The Foundation for Civilizational Transformation and Conscious Evolution for providing inspiration and guidance towards the successful accomplishment of this research.

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