EURASIAN GEOPOLITICS AND EMERGING TRENDS OF NAVAL AVIATION IN INDIAN OCEAN

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Abstract

Eurasian region and Indian Ocean have great strategic attraction owing to their geography, which combines them as a single pivot of global geopolitics in the 21st century. Historically, there has been a universal consensus among all the strategists, despite the difference in their approaches, that Eurasia and Indian Ocean are the key regions to extend the political influence at global level. Various land power and sea power theories were presented to achieve this goal but the rise of aerial warfare over sea i.e. naval aviation, has changed the modern approach of safeguarding and extending the political and military influence of a state in any region. Technological strides made in air-sea warfare, since the World War II, transformed the naval aviation into a credible strategic force over sea and land and an influential foreign policy as well. The US, being the most dominant global power, has been trying to extend its influence in the Eurasian region for many decades. The US naval aviation capabilities and future plans along with her foreign policy goals for the region are the primary driving force behind the naval power competition in the Indian Ocean. This paper examines the emerging trends of naval aviation in the context of prevailing geopolitics in the region with a focus on strategic importance of Indian Ocean and the Eurasian landmass. This analysis of balance of power of naval aviation in Indian Ocean is critical as it has far-reaching implication for all the littoral nations in the region, particularly for Pakistan, due to the Indian participation in this strategic competition as an American ally.

Introduction

Asia and Europe have a contiguous geography with diverse cultural values of East and West dividing this landmass in two separate continents. People, civilizations and cultures of both these continents have been

benefitting from the rich trade of Indian Ocean for last millennium. This trade enticed travellers from Europe to discover sea routes to Asian lands. During the colonial era, Indian Ocean once again played key role as European battleships began to emerge in Asian water ways. The American and Western industrial revolution during the 19th century and the discovery of crude oil in the Middle East, at the beginning of the 20th century, further enhanced the strategic importance of the Indian Ocean. Eurasia is home of almost 5 billion people and the Indian Ocean plays a more important role for this huge population. With increasing population around Indian Ocean, the trade volume and new security challenges are also on the rise and so is the strategic competition among littoral nations and extra-regional players to protect respective geopolitical and geo-economic interests.

This body of water is more than 6,200 miles (10,000 km) wide between the southern tips of Africa and Australia and has an area of about 28,360,000 square miles (73,440,000 square km)."[1] Many of the world's important seas are also part of the Indian Ocean. These seas not only connect the main body of water to the littoral nations of Southern Eurasia but some of the most critical choke points are also part of these smaller seas where 40% of global trade takes place. This makes its geography strategically more attractive for both regional and global players as well. Bab el Mandeb, Strait of Hormuz and the Strait of Malacca are three most important choke points and large part of trade to and from Indian Ocean and its seas to other oceans (Pacific and Atlantic) passes through these narrow sea ways. Narrow Strait of Hormuz is the main maritime link between oil rich Persian Gulf and the rest of the world. Similarly, the strategic significance of the Malacca was well established during the 15th and 16th century when European navigators began to travel East and trade between East and West was initiated. In 1511, Tomé Pires described the importance of Malacca, "Whoever is lord of Malacca has his hand on the throat of Venice."[2] Today, one fourth of total global energy trade through sea takes place through Malacca strait and the volume of this trade is expected to increase with raised energy demands from India and China. As Kaplan notes, "China's demand for crude oil doubled from 1995 to

2005 and expected to get doubled again within next 15 years."[3] Indian energy demands also show similar trend. The entire Indian energy import from the Middle East takes place primarily through the Indian Ocean.

Due to this dependence of global maritime trade on these choke points, the littoral nations situated around these choke points hold strategic importance due to their geography. For example, the regional stand-off between Iran and the US over Tehran's nuclear programme has further complicated the regional geopolitical scenario as Iran has announced to block Strait of Hormuz after "European Union nations agreed on an oil embargo against Iran as part of sanctions over its nuclear programme."[4] Similarly, Pakistan is located on the world map at a very strategic location, as its land routes and mountain passes are the gateways to the Central Asia from the Indian Ocean through landlocked Afghanistan. Similarly, Pakistan provides the shortest path connecting Western China to the oil rich Persian Gulf. The fact that Pakistani routes to Afghanistan for US/NATO supply line is yet another manifestation of importance of Pakistan's geography.

Apart from these, Indo-China energy supply competition in the Indian Ocean is another critical factor impacting the regional stability. In order to pursue their long-term goals, both India and China are building up their maritime military power in the Indian Ocean where the US already maintains formidable power projection capabilities through forwardly deployed naval fleets.

Problem Statement

In Post-World War II era, Eurasian region and Indian Ocean emerged as combined area of interest. Today, within a very fluid and subtle geopolitical environment, a strategic maritime competition is prevailing in the Indian Ocean. Enhancing the naval aviation capabilities is the focal point of every competitor's maritime strategy. In order to comprehend the seaward aerial challenges for the regional stability and national security, it is critical to examine the emerging naval aviation trends and analyze the various factors shaping these trends.

Indian Ocean and Eurasia: Single Area of Interest

Classical geopolitical analysts, Alfred Thayer Mahan and H. J. Mackinder, defined Eurasian landmass and Indian Ocean as two separate but critically important geographies to extend influence to other regions of the globe.

Mahan, a US naval strategist declared Indian Ocean a key for global dominance and "whoever controls the Indian Ocean dominated Asia. The ocean is the key to seven seas. In the 21st century the destiny of the world will be decided on its waters."[5]

Mackinder presented his theory of political geography which emphasized the significance of the Eurasian landmass. He stated, "Is not the pivot region of the world's politics that vast area of Euro-Asia which is inaccessible to ships, but in antiquity lay open to the horse-riding nomads, and is today about to be covered with a network of railways?"[6]

Both Mahan and Mackinder also presented two contradictory approaches for extending political control over the Eurasian region.

Mahanian strategy considered sea power much more important and decisive in nature compared to the land power. According to this sea-power theory, irrespective of its power and strong organization, no land power would be able to withstand a prolonged naval blockade and would surrender eventually. The theory emphasized on building strong battleship and commercial fleets along with the ability to control important sea routes, naval bases, ports and choke points across the world. In order to establish a principle proof for his sea power approach, Mahan argued that "British control of the seas, combined with a corresponding decline in the naval strength of its major European rivals, paved the way for Great Britain's emergence as the world's dominant military, political, and economic power."[7]

On the other hand, Mackinder, while describing the Eurasian heartland (mainly the areas under the control of the Russian Empire

at that time) as the pivot of World Island, considered the land power more important in the Eurasian region than sea power due to its unique geography. He conceived,

> "The Euro-Asia as a continuous land, ice-girt in the north, water-girt elsewhere, measuring 21 million square miles, or more than three times the area of North America, whose centre and north, measuring some 9 million square miles, or more than twice the area of Europe, have no available water-ways to the ocean, but, on the other hand, except in the subarctic forest, are very generally favourable to the mobility of horsemen and camel men."[8]

Emergence of Naval Aviation

Mackinder's and Mahanian visions were put to test during the later years of the World War II. Technological advances in military aviation made aerial power the most decisive factor in many battles during the war. The role of Allied aerial firepower was so significant that German Field Marshal Rommel was compelled to state, "**Anyone who has to fight, even with the most modern weapons, against an enemy in complete control of the air, fights like a savage against a modern European army.**"[9]

Similarly, the impact of the control of skies over sea played a critical role in many naval battles in the Pacific and Atlantic Oceans, which altered the course of the war. Aircraft carriers emerged as a prime naval asset to gain strategic results in the sea. During the war, major naval engagements against the enemy fleets were being made through aircraft because of their much greater ranges than the battleships' guns. Allied inventions like radar, guided torpedoes, bombing sights, Catapult Aircraft Merchantmen (CAM) and Leigh Light changed the course of the sea battles. These innovations ensured fleet safety against the coastal defences by extending the range through aircraft. Aircraft carriers enabled Japanese Navy to use airplanes during the attack on Pearl Harbor. Later,

the US deployed aerial platforms during the 'Battle of Midway Atoll' in 1941-42. In fact, the later one is considered to be the most intense fleet battle in the Pacific theatre. The impact of this battle was so profound that "though the war had three more years to run, the Imperial Japanese Navy would never again initiate a strategic offensive"[10] after losing four of its primary carriers along with many destroyers in a single day. Superior aerial reconnaissance and firepower abilities made this victory possible for the US Navy. Till 1942, when German and Russian forces were vying for securing Russian heartland the future course of the World War II was being decided in Pacific and Atlantic Oceans where sea and air powers emerged as the most decisive force.

Mackinder's pivot theory, along with his land force approach, met with failure after unsuccessful German attempt to capture Moscow during the World War II. His work was challenged and countered by Spykman through his 'Rimland Theory' which basically was an update to Mackinder's original idea. In Rimland Theory, the geographical pivot of the global politics shifts from Russian heartland to what Mackinder had defined as 'inner crescent' which mainly consists on littoral nations. According to Spykman, "the heartland power would be immobilized by difficulties with internal lines of communication and lack of mobility to expand beyond the physical barriers along its borders." [11] So, any power which wants to control the heartland will have to dominate and control the Rimland as it would provide the control over both air and sea. In this way, he proved himself a critic and an advocate to both Mahan and Mackinder as well. Evidently, the air-sea battles during the World War II played significant role in articulation of Spykman's vision.

During the Cold War, both the US and Soviet Union were engaged in covert wars like attacking or coercing each other's allies and using proxies in active battlefields to engage each other in the war of attrition. Hence Spykman's vision was not tested till the First Gulf War in 1990's where geography of littoral nations played considerable role in operation Desert Storm in which, "critical to the success of all aviation missions was the role of electronic countermeasures, "jamming" or "defence suppression" aircraft."[12]

Though post-Cold War geopolitical scenario of the region was not predicted by Spykman, it, however, does correlate with Spykman's thinking. Spykman held that the nation that could maintain control of the Rimland could dominate the world political and economic order."[13]

Dismemberment of the Soviet Empire in 1988 allowed the US Navy to project power in Asian seas. It was observed that "the Indian Ocean has become an area of acute tension -- a peril zone with conventional and nuclear vessels of the major powers staging a permanent presence in the area."[14]

Prevailing geopolitical scenario is shaped by a number of factors like war on terror, US quest for political influence in Central Asian 'stans' and Asia Pacific region, growing Chinese economic and military strength, emerging Indian power, Indo-China energy security competition, social uproar in Middle East, Iran-US tensions over Iranian nuclear programme, North Korean nuclear crisis, Piracy around the coast of Somalia. Ironically enough, all these hotspots are located around the littoral nations of Indian Ocean. A bird's eye view at prevailing geopolitical map of the world is sufficient to prove that Spykman's Rimland, particularly the littoral nations of Middle East and South Asia, have been entombed in a complex geopolitical scenario with multiple possible outcomes depending upon various regional and global dynamics.

In this complex geopolitical environment, every major naval force in the Indian Ocean is trying to become a Mahanian sea power having strong battleship and merchant fleet, controlling water ways (Sea Line of communications) and controlling the critical choke points. But due to the permanence of air as the most dominant warfare arena, both over sea and land, no naval force would be able to meet these three critical objectives while ignoring the strategic value of developing naval aviation.

Modern Naval and Maritime Aviation

Due to extensive technological strides during the last 65 years, naval aviation has emerged as the most critical component of national defence forces. Today, naval aviation undertakes a wide range of operations.

- **Anti-Surface Ship Warfare (ASU):** Detection, tracking, identification and destruction of the enemy surface vessels through anti-ship missiles, bombs, torpedoes and mines.

- **Anti-Submarine Warfare (ASW):** Detection, tracking, identification and neutralizing the enemy submarines using air launched torpedoes and mines.

- **Command, Control, Communication, Computers, Intelligence (C^4I)**: Coordination of war efforts by providing a single command station to pass information and share intelligence among all the concerned unit commanders across the theatre of operation.

- **Airborne Early Warning (AEW):** Detection of enemy surface, air and land movement in the battlefield from a very long distance and passing near real time information to the command centre for further instructions. Specialized planes, equipped with long-range powerful radars and Electronic Support Measures (ESM) systems, perform AEW missions.

- **Intelligence, Surveillance and Reconnaissance (ISR):** Gathering, sorting, classifying and disseminating intelligence information about the enemy capabilities through advanced sensors.

> "ISR systems range in size from hand-held devices to orbiting satellites. Some collect basic information for a wide range of analytical products; others are designed to acquire data for specific weapons systems."[15]

- **Strike Warfare (STW):** Neutralizing the enemy battle or merchant ships, harbours, ports, shipbuilding dockyards, command and control centres (irrespective to its location in sea, air or land) and any other militarily important asset.

- **Electronic Warfare (EW):** One of the most profound force-multipliers in the modern warfare, which seeks to deny the access of electromagnetic spectrum to the enemy and control the spectrum for own forces. "Today's weapon systems and support systems rely on radio, radar, infrared (IR), electro-optical, ultraviolet, and laser technologies to function in peace and war." [16]

- **Close Air Support (CAS) in Amphibious Warfare (AMW):** Very similar to CAS role of any Air Force. Ship borne helicopters and carrier borne multirole fighters provide necessary cover to amphibious units to ensure their safe landing on enemy seashores.

- **Airlift/Transpiration/Logistic Support:** Moving troops and supplies to and from ships through helicopters and light transport aircraft.

It must be noted that some of the roles like C^4I and ISR are sometimes performed by modern multi-mission C^4ISR platforms. Similarly, modern Maritime Patrol Aircraft (MPAs) often perform the ASU, ASW, STW and ISR operations depending upon the theatre of war and nature of threat.

Eurasian Geopolitics & Naval Aviation Trends

Spykman thinking played a central role in the US policy of containing any emerging maritime power in the Rimland. As stated by the political scientist Robert S. Ross, "The United States is an East Asian maritime power with no strategic imperative to compete for influence on the mainland. And the status quo enables it to secure its balance of power interests and its interest in regional shipping lanes through a maritime containment strategy."[17] However, in this new US containment strategy, critical focus is on the regional maritime partnerships and the naval aviation, which "is also adapting to a series of geopolitical revolutions which will dramatically increase the future demand for a secure sea base capable of projecting dominant power ashore in wartime against the full spectrum of possible opponent."[18] This presents a more concise picture

of naval power projection by the United States in the Asia Pacific and Indian Ocean.

The US policy has spawned the most profound strategic maritime competition of contemporary history between the US and China. This competition is unfolding along the Pacific rim of Indian Ocean in the South China Sea but due to emergence of new strategic alliance (like Indo-US) almost all the littoral nations of the Indian Ocean are being affected. The US Secretary of State, announced last November that "the American influence in Asia is here to stay"[19] while describing the regional waters as "US pivot in Asia".[20] These statements represent the US policy towards Asia in the 21st century. This also explains the planned prolonged stay in Afghanistan after 2014[21] as well.

The US-China Strategic Competition

As mentioned earlier, Indians have a geographical advantage over China as well. Indian SLOCs from the Arabian Gulf and Red Sea are not as complicated as the Chinese sea routes are due to the 'Malacca Dilemma'. The only major choke point for the Indians is Strait of Hormuz in the Gulf of Oman.

The US wants to maintain her maritime presence in the Chinese Exclusive Economic Zone (EEZ). China is resisting and also rapidly building its maritime power projection capabilities. This emergence of China is the harbinger of US-China strategic contest in the Indian Ocean particularly in South China Sea. Chinese naval ambitions challenge the American strategy in Indian Ocean and Asia-Pacific region. Apart from this strategic US-China competition, there are other concerns for the US interests due to which the region is a critical one for the US like Iranian threats to block the Strait of Hormuz, North Korean nuclear programme, and exerting strong political influence in Afghanistan in the post-2014 scenario. Hence maintaining global maritime leadership is the end goal of the US strategy through various ways and means.

The American Strategy

Over the years, the American strategists have proposed unchallenged American presence in the region as the most critical strategic factor. The idea was first described by the former National Security Advisor to President Carter, Zbigniew Brzezinski, in the following words, "It is imperative that no Eurasian challenger emerges capable of dominating Eurasia and thus of also challenging America."[22] Similarly, Robert D. Kaplan considers it necessary for the US to remain unchallenged because it will give the US "a unique position that will give it the leverage to act as a broker between India and China in their own backyard."[23] But, why Eurasia is such an important region for the US? The following quote by Brzezinski might be helpful in finding an answer:

> "A power that dominates Eurasia would control two of the world's three most advanced and economically productive regions. A mere glance at the map also suggests that control over Eurasia would almost automatically entail Africa's subordination, rendering the Western Hemisphere and Oceania geopolitically peripheral to the world's central continent."[24]

Keeping this in mind, the statement of US Secretary of State Hillary Clinton, during her visit to Australia in November 2012, succinctly expresses the American policy for the region. She announced, "We never actually left Asia. We've always been here and been a presence here. We consider ourselves a Pacific power. But in the 21st century it's important that we make absolutely clear we are here to stay." [25] But this American strategy is not very comforting for the regional stability. Larry Strange, Executive Director at Cambodia Development Resource Institute (CDRI) observed,

> "China is strengthening its influence of geopolitics in the region, which is an important reason for the United States to adjust its strategic focus. The United States must

> be unrealistic if it hopes to use the strategy of returning to Asia-Pacific to curb China, but the intervention of the United States will make the regional economic and security relations complicated."[26]

While the US is trying to take an assertive role, her maritime strategic objectives in the Indian Ocean are faced with various concerns and restrains. The numerical strength of the US Navy has receded considerably since the end of the Cold War era. The total number of surface ships in 1987 was 594, while in 2012 the USN's surface fleet strength stands at 281.[27] Albeit, this numerical depletion of its surface fleet hasn't prevented the US Navy to operate and project power in all the global geopolitical hotspots due to continuous technological advancements and high quality leadership. But irrespective of all its advanced technologies, numbers do matter in power projection capability. This has compelled the US to look for a maritime strategic partner in Indian Ocean as a means to meet her political ends. Due to historical tensions between India and Pakistan, this US-Chinese strategic maritime competition affects Pakistani interests and stability of the Arabian Sea as well. India is the largest arm importer in the world, and given the massive modernization of Indian Naval aviation, acquisition and introduction of new advanced weapon systems would disturb the conventional balance of power in Arabian Sea.

Quite a few USN projects have been delayed due to the economic strains as well; including a two-year delayed induction of Ohio-class SSBN.[28] But a noteworthy fact is that USN Aviation programmes remain intact which constitutes one of the potent components of the American Naval forces.

At present, the USN Aviation is the leading naval aviation wing, both in sophistication of weapons in its arsenal and numerical strength. There are more than 350 aerial platforms of all kinds in the 7th fleet, which operates in the Western Pacific, Indian Ocean and Arabian Sea.[29] The UAVs hold central focus in future programme of US naval aviation. Projects like Unmanned Combat Air System Demonstration (UCAS-D)

and Broad Area Maritime Surveillance (BAMS) are unparalleled in the world. UCAS-D is "to mature technologies for a carrier suitable, low observable relevant, unmanned air system capable of providing persistent, penetrating surveillance, and penetrating strike capability in high threat areas."[30] BAMS, "As an adjunct to the P-8A, the BAMS UAS will provide combat information to operational and tactical users such as the Expeditionary Strike Group (ESG), Carrier Strike Group (CSG) and the Joint Forces Maritime Component Commander (JFMCC)." [31]

The Chinese Strategy

Chinese are well aware of the US strategy of containment particularly in the South China Sea where US military assistance to Taiwan is a major Chinese concern. India, Japan and South Korea are already strategic allies of the US. For China, almost all Asian seas are important for the continuation of safe energy supplies from the Arabian Gulf to keep the 'global manufacturing powerhouse' running and not allowing the US led alliances to deter Chinese policy towards Taiwan. To cope with these challenges, Chinese are building People's Liberation Army Navy (PLAN) with blue water capabilities with special focus on air-sea battle capabilities.

The Chinese decision to acquire an aircraft carrier is also part of a long-term maritime strategy. Today, Chinese Navy is the second largest in the world with strength of 250,000 along with 56,000 strong PLA Naval Air Force, operating several hundred land-based aircraft and ship-based helicopters. But still China would not be able to meet the Western, particularly the American, maritime power projection capabilities anytime soon.

PLAN Air Force Aircraft and Helicopters

Role	Aircraft	Quantity
Surveillance	Y-8 MPA	6
Long-range maritime patrolling & ISR	-	
Training and flying conversion	JJ-6 JL-8 JL-9	14 12 12
AEW	Y-8 ELINT Z-8 *Ka-31	2 26 10
Transport	Mi-8	8
Anti-submarine	SH-5 *Ka-28 *Z-9C	3 12 20
Air-defence, attack, anti-ship, strike	Su-30MKK2/33 J-10 J-11 JH-7A J-7 D/E Q-5 *SA365N	23 20 24 35 30 30 3
Strategic Bombers	H-6D	16
Utility	Y-5 H-6U (Tankers)	 10

* Helicopter

Source: Adam Baddeley, "The AMR Regional Air Force Directory 2012", *Asian Military Review*, February/March 2012, P 25.

Chinese Navy lacks in many, areas particularly in ISR, EW, ASW capabilities and carrier-borne aerial operations. The entire air fleet of Chinese Navy is composed of land-based aircraft due to which a compromise on their range becomes inevitable disadvantage. This is why many military experts believe that the Chinese Navy, particularly its

aviation wing has a long way to go before being able to project strategic capabilities over regional seas. Nevertheless, the induction of long-range MPA, Y-8X (range 5,600 km) which is equipped with "American Litton AN/APS-504(V) 3 surface search radar",[32] is a clear indication about the prevailing realization in PLAN about these strategic shortcomings.

Expected Future Induction of PLAN Air Force

Role	Aircraft	Status
Anti-ship	*Z-9D Dauphin	Under development
Anti-Submarine	Y-8FQ/	2 prototypes built
AEW / AWACS	Y-7 based AWACS Y-8W/ KJ-200	1 prototype undergoing tests Delivered
MPA	Y-8X	Delivered

* Helicopter

Source: Chinese Military Aviation [33]

Indian Maritime Strategy

Foremost strategic Indian goal in the Indian Ocean is to ensure that her 7,516km long coastline, 12 major ports and 2 million square kilometre Exclusive Economic Zone (EEZ)[34] is secured and that is the only way for India to prosper as 90% of total Indian trade is sea-based and 65% of it comes from Arabian Gulf, Europe, Africa and the US which reaches Indian ports after passing through Western seas (Gulf, Red Sea and Arabian Sea). Some Indian maritime experts, as a policy goal, have suggested that "Indian Ocean, therefore, must remain India's Ocean."[35]

Apart from that, deterring the Chinese threat is the most critical element in Indian strategic thinking. China, according to Indian maritime defence experts, "is encircling India from Eastern Frontiers, i.e. through Myanmar coast, Northern Frontiers, i.e. through Tibet and the Western Frontiers i.e. through Pakistan."[36] To this end, Indian Naval modernization and expansion programme envisages to build blue water Navy with the capability "to operate over 200 miles (320 kilometres)

from shore, in other words long range, deep water, oceanic maritime projection bringing with it sea power."[37]

Indian naval aviation operates under 3-tier maritime patrolling strategy with Unmanned Aerial Vehicles (UAVs) forming innermost tier while outermost tier is formed by long-range maritime planes like Tu-142 Bear (soon to be replaced by P8-I).[38] Indian Naval Aviation inventory is being managed by force of 5,000 specially trained Indian naval aviation personnel. By 2020, Indian Navy wants to increase its carrier strength to 3.

Strength of Indian Naval Aviation

Role	Aircraft	Quantity
Surveillance	BN-2 Islander	5
Long-range maritime patrolling & ISR	Il-38SD May	5
Training and flying conversion	*HJT-16 Kiran *HPT-32 Deepak Harrier T4 MiG-29KUB Fulcrum	8 8 2 4
AEW	*Ka-31 Helix	9
Transport	Do228-101/201	-
Anti-submarine	*Ka-28 Helix *Sea King Mk42 Tu-142ME Bear *Dhruv	10 18 8 6
Air-defence, attack, anti-ship, strike	MiG-29K Fulcrum Sea Harrier FRS51	7 12
Utility	*SA316B Chetak *SA319B Chetak *Mi-2 Hoplite *Ka-25 Hormone	30 25 2 3

* Helicopter

Source: Adam Baddeley, "The AMR regional Air Force Directory 2012", *Asian Military Review*, February/March 2012, PP. 26-27.

Along with these naval aviation assets, the future acquisitions include an aircraft carrier from Russia along with Mig-29K carrier borne fighters which are regarded as "proverbial game changers"[39] by the Indian Navy due to armament carrying capacity, range and advanced sensor suits of this carrier borne multi-role fighter. For air superiority, it carries RVV-AE and R-73E air-to-air guided missiles. For strike and anti-ship missions, Mig-29K carries Kh-31A and Kh-35 sub-sonic cruise missiles with ranges of 110 km and 130 km respectively.[40] Both these weapons add deadly striking capability against surfaced ships from safe stand-off ranges.

For surveillance and reconnaissance, INS 342 Squadron was raised in 2006 and consists of Searcher and Heron UAV.[41] This was the first UAV squadron in Indian Navy. In April 2011, 3rd such squadron was raised in Indian Navy comprising IAI Searcher tactical UAVs and IAI Heron long-endurance UAVs.[42] As a large MALE (Medium Altitude, Long Endurance) UAV, it's built to carry multiple payloads at a time for a variety of missions. Choices include electro-optical and thermal surveillance equipment, Synthetic Aperture Radars (SARs) for ground surveillance, maritime patrol radars and sensors, signals and other intelligence collection antennas and equipment, laser designators, and even radio relays.

To bolster her ISR and AEW capabilities, P-8I is the most advanced and sophisticated weapon system purchased by the Indian naval aviation in the recent times. It "is a long-range anti-submarine warfare, anti-surface warfare, intelligence, surveillance and reconnaissance aircraft capable of broad-area, maritime and littoral operations."[43] The plane is fitted with the latest sensor suites to detect and attack surface and subsurface targets. The upgraded APS-137D (V)5 maritime surveillance radar and signal intelligence (SIGINT) system developed by Raytheon[44] are among the sensors that help in tracking and identifying the target. Delivery of P-8I to the Indian Navy has begun since December 2012.

Future Maritime Aircraft and Helicopters of Indian Naval Aviation

Role	Aircraft	Quantity	Delivery Expected
Long-range maritime patrolling	P8-I	12	2012
Air-defence, attack, anti-ship, strike	Mig-29K Naval LCA	34 6	2012
AEW	*Ka-31 Helix	5	-
Training	Hawk 132	17	2012

* Helicopter

Source: Adam Baddeley, "The AMR regional Air Force Directory 2012", *Asian Military Review*, February/March 2012, PP. 26-27.

Apart from these acquisitions, Indian strategic manoeuvring in the Indian Ocean like building ports in Iran and connecting it to Afghanistan indicates that Indian strategy of extending influence is not limited to the Indian Ocean only. Afghanistan and Central Asia are also among Indian areas of interests. With this kind of turbulence and militarization of the region, "ensuring good order at sea poses a daunting challenge to existing maritime security forces. In fact, many coastal navies focus on policing roles and the security of littorals."[45]

Naval Aviation Trends: Implication for Regional Stability

To assess the long-term implications of this naval aviation competition in the Indian Ocean, the above analysis can be summarized as following:-

- As a matter of critical political geography, Spykman's thinking would prevail in foreseeable future.
- As a matter of strategy in this political geography, Mahanian vision would continue to prevail with only one addition. i.e. Maritime aviation as an integral part of naval power.

- The delicate nature of regional geopolitics would continue to prevail with Indian Ocean becoming more militarized.
- The US would continue to play an important role in shaping and driving regional geopolitics through her diplomacy and maritime power projection as an instrument of foreign policy.
- China and India will emerge as strong contenders in naval aviation competition.
- There would be more aircraft carriers, belonging to competing navies, with strike and ISR/AEW platforms as main assets.

Implications for National Security

The emerging trends of naval aviation in Indian Ocean cannot be ignored in a complex geopolitical milieu where most of the regional security dynamics are being shaped by extra regional forces and the strategic competition among global players in neighbouring region. Prevailing US-Iran tensions, piracy and growing Indian maritime aviation pose challenges for Pakistan and its maritime security. Indo-China arms race in the region also affecting balance of power between Pakistani and Indian naval aviation wing. India plans to have a 165-ship fleet by 2022, consisting of surface combatants, submarines and three aircraft carrier groups with a total of 400 MiG-29K aircraft and helicopters. [46]

As part of its active-defence doctrine, Pakistan maintains a dedicated Naval Aviation arm along with maritime aviation support from Pakistan Air Force. Formed in 1970, PN air arm operates just 5 smaller ASW squadrons constituted both by aircraft and helicopters of western and American origins for anti-ship, anti-submarine, surveillance and transport missions. In 2007, PN began induction of "seven upgraded ex-US Navy P-3Cs Orion aircraft and ordered the upgradation of two Pakistan Navy aircraft. The upgrade includes Inverse Synthetic Aperture Radar (ISAR/SAR), Electronic Support Measures (ESM) and communication systems."[47] But despite their upgradation in sensor suits, PN's P3Cs would be inferior in operational capabilities to Indian Navy's future MPA, i.e.

P-8I. Indian Air Force and Indian Navy's fighter jets would remain a serious challenge to Pakistani MPAs and maritime helicopters.

With more powerful players emerging in the region, Pakistan's geography is its biggest strength but it could become its biggest weakness as well if not protected from both internal and external threats. Ensuring the qualitative competitiveness of Pakistan Navy's air arm is unarguably the most critical challenge right now but there are some other issues which have become Achilles' heel of PN in recent times.

- **Physical security:** Deadly terrorist attack on PNS Mehran, in which PN lost two of its P3-Cs, put a big question mark on the measures taken by the PN to secure its installations like a Naval Aviation base. Destruction of two P3-C Orion aircraft was the most severe blow to PN. The impact of this terrorist attack can only be equated with war-time attrition. This attack indicates mounting non-kinetic internal threat against PN.

- **Dependence on Pakistan Air Force for Maritime Strike Role Missions:** The No. 8 Tactical Attack Squadron is the only squadron in the PAF that provides maritime support missions to the Pakistan Navy.[48] Keeping insight the growing strength of Indian naval air arm, it is critically important for Pakistan Navy to raise new naval aviation squadrons to cater future threats like Mig-29K and other planned Indian acquisitions.

- **Absence of Naval Fighter or Aircraft for Escort Role:** Maritime escort becomes the most critical role when the safety of high value multi-mission naval aviation aircraft is in question. Destruction of PN's Breguet Atlantique on 10 August 1999 by two IAF's Mig-21s caused PN not only a MPA platform but also 16 lives of crew members onboard.[49] Had Pakistan Navy an escort squadron available the ill-fated plane would have been saved along with precious lives of brave men of Pakistan Navy. The fact that the PN has not raised any escort squadron, constituted by multirole fighters, even after 13 years of dreadful tragedy of Breguet

Atlantique, enhances the probability that Indian Air Force might seek another opportunity to repeat the successful downing of an unarmed Pakistani plane.

- **Absence of Fleet Defence Surface Vessels:** Considering the planned expansion in the Indian naval air arm, it would be prudent to assume that Pakistan Navy's fleet-level SAM capabilities need an urgent upgradation. Indian Naval aviation aircraft armed with long range anti-ship cruise missiles (like Kh-31) would pose a serious airborne challenge to Pakistan Navy's surface fleet.

- **Lack of AWACS Platform for Pakistan Navy:** Current fleet of PN air arm consists of multi-mission platforms capable of performing multiple maritime tasks. But there is no dedicated AEW/AWACS platform in the inventory that could detect and warn from a long distance about the airborne threats approaching towards Pakistani waters.

Operational readiness of national armed forces demands the tactical and strategic analysis of capabilities of perceived enemy. They are not related to the apparent stance of any party, which can be changed any time. Incidents like Mumbai 26/11 and Salala attack have shown that how quickly political equation, in this volatile region, could change from peaceful coexistence to the hostilities.

64 years ago, Quaid-e-Azam forewarned about the consequences a nation would face if it ignores the importance of aerial power. He said, in his address to the young officers of PAF Flying Training School, Resalpur, "A country without a strong air force is at the mercy of an aggressor. Pakistan must build up her Air Force as quickly as possible. It must be an efficient Air Force, second to none".[50] Unarguably, this is pertinently true for every branch of aviation especially for Pakistan naval aviation, irrespective of the defensive or offensive nature of our defence policy. Traditional threats as well as emerging security challenges, like piracy and Non-State Violent Actors (NSVAs), demand that Pakistan needs robust naval aviation arm to respond to any emergency or crisis within shortest

time. Pakistan needs to constantly re-evaluate her maritime aviation strength not just to fight off our traditional rival in Arabian Sea but to project conventional capabilities as part of national deterrence and diplomacy. Adjustment in the allocation of funds and long-term military acquisition plans must reflect improved balance of naval aviation power to ensure the regional stability and national security.

Conclusion

Converging and diverging political and geo-economic interests of various countries in Eurasia are the harbinger of strategic power competition in the Indian Ocean. In pursuance of their respective interests, major global players have indulged in a strategic competition in the Indian Ocean region. This strategic competition originates from Asia Pacific region but it has implications for countries like Pakistan as well. Contiguous geography of regional competitors with historic conflicts and border disputes is a critical parameter in the regional security equation.

Since the World War II, naval aviation has emerged as the potent strategic force over sea and air. Major maritime players involved in strategic competition in the Indian Ocean are modernizing their aviation arms. Indian air power, both over land and sea, along with strong political will to extend the influence of Indian Navy beyond Indian precincts, poses serious challenges to Pakistan's national security. In order to ensure the maritime security and stability in the Arabian Sea, Pakistan must carry out strategic appraisal of existing naval aviation balance of power and synergize Pakistan Naval Aviation with other sister forces. Pakistan is a critical geography and one of four nuclear states operating in the Arabian Sea and hence has a critical role to play in the stability of the region. This task demands a robust, strategically capable naval aviation force as part of national deterrence against traditional and emerging threats.

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