Indian Military Modernisation: Implications for Pakistan

Masood Ur Rehman Khattak*

Abstract

Strategic stability in South Asia is fragile because of India's massive military build-up, doctrinal shift, and change in its strategic thinking. The Indian government has allocated billions of dollars to transform its tri-services with network centric and electronic warfare capabilities. This is likely to create a huge strategic disparity vis-à-vis Pakistan. Against this backdrop, the possibility of a limited war warrants countermeasures by Pakistan. India and Pakistan must show restraint and resolve their issues amicably through peaceful dialogue for the long-term peace and stability of South Asia.

Keywords: Indian Military Modernisation, Strategic Stability, Nuclear Deterrence, Network Centric Warfare

Introduction

The strategic stability in South Asia is at risk because of India's massive military modernisation drive and its doctrinal shifts. The Indian military's modernisation programme has been increasing conventional disparities in South Asia, which is likely to compel Pakistan to rely on nuclear weapons to prevent the Indian military from any misadventure against it.

India's fast economic pace and its ever-growing military might are reflective of its intention of becoming an emerging global power.[1] The Indian military is the third largest military in the world.[2] Since

* *The author is Assistant Professor at Department of Politics and International Relations, International Islamic University, Islamabad, Pakistan.*

[1] B J C McKercher, *Routledge Handbook of Diplomacy and Statecraft* (New York: Routledge, 2012), p 122.

[2] "The Military Balance: Chapter-Six-Asia," *Routledge* 115, issue 1(February, 2015): 247, http://bit.ly/2reN8fS

independence in 1947, the Indian strategic thinking and its military modernisation have been traditionally projected against Pakistan.[3] However, Rajesh Basrur believes that "India's military modernisation is a response to that of China, hence, it is a cascading problem."[4] On the contrary, Parvez Iqbal Cheema perceives it as an Indian move towards regional hegemony. He said:

> Modi recognising that India has economically done very well. They have sufficient money to purchase the modern weaponry, so they are purchasing a lot of weapons from various parts of the world, including Russia, America, Israel and France. Their idea is, first you build the strength, equip them with the modern weapons and then try to attain whatever your objective is. I think their regional objective is to be acknowledged as the most dominant and powerful country in South Asia and others should follow their dictates.[5]

Walter C Ladwig argues that "to date, the Indian military modernisation has largely been about recapitalising the force and attempting to replace outdated platforms. Thus, it has not had a significant impact on the military balance."[6] The Indian military is facing the challenge of the outdated weaponry in its arsenal. On the other hand, Pakistan military is quickly filling the conventional gap but, at the same time, the Indian government has allocated billions of dollars to revamp its overall military machine to maintain its strategic dominance in South Asia. In future, it would become difficult for Pakistan to maintain the conventional parity with India. According to Stockholm International Peace Research Institute (SIPRI), India was the largest arms importer in the world during 2013-17[7] and it has spent around US$100 billion in last 10 years to refurbish its ageing military

[3] Dan Blumenthal, *Strategic Asia 2012-13: China's Military Challenge* (Washington DC: The National Bureau of Asian Research, 2012), 284.
[4] Rajesh Basrur, (Professor of International Relations, South Asia Programme, S Rajaratnam School of International Studies, Nanyang Technological University, Singapore), in an emailed interview with the author on October 13, 2017.
[5] Professor Dr Parvez Iqbal Cheema, (Dean Faculty of Contemporary Studies, National Defence University), in an interview with the author on October 17, 2017, Islamabad.
[6] Walter C Ladwig-III, (Assistant Professor in International Relations at King's College London) in an emailed interview to the author on October 18, 2017.
[7] "Asia and the Middle East Lead Rising Trend in Arms Imports, US Exports Grow Significantly, says SIPRI," Stockholm International Peace Research Institute (SIPRI), March 12, 2018, https://bit.ly/2tDyRec

machine.[8] In addition, the defence budget for the 2017-18 was also increased to US$53.5 billion.[9] In this context, Air Marshal (Retd) Ashfaque Arain argues:

> Any Indian plans for military's modernisation as well as consequent doctrinal shift are bound to draw a possible response from the neighbours. In recent years, Pakistan's armed forces have modified their warfighting strategy to counter the Indian Cold Start Doctrine (CSD) / Proactive operations. Additionally, certain weapon development programmes are also in response to the Indian doctrinal shift.[10]

The rapid Indian military modernisation is likely to create a security dilemma for Pakistan. The growing conventional disparity between India and Pakistan will force Pakistan to increase its reliance on nuclear weapons. Consequently, this will trigger a new nuclear arms race in the region, undermining the deterrence stability in South Asia.

Transformation of the Indian Armed Forces

a) Modernisation of the Indian Army

After the overt nuclearisation, it is risky to fight a conventional war in South Asia. Since 2004, the Indian strategic thinking is focused on fighting a limited, intense and quick war to deter Pakistan's alleged support to the freedom fighters in the Indian-held Kashmir. The Indian Military modernisation is in juxtaposition with their doctrinal shift from Sunderji Doctrine of deeper thrusts to CSD. In 2018, the Indian Army came up with the Land Warfare Doctrine, which aims at quick, swift and intense limited war along with agile force, reorganised strike formations into Integrated Battle Groups (IBGs) to carry out small scale incursions below the nuclear threshold of Pakistan.[11] Hence, the Indian Army's modernisation is in line with its strategic manoeuvring in the region because both states possess

[8] Rahul Singh, "India Still Largest Arms Importer, Spent more than $100 b in last 10 years: SIPRI," *Hindustan Times*, March 12, 2018 https://bit.ly/2P46Frw
[9] Laxman K Behera, "India's Defence Budget 2017-18: An Analysis," Institute for Defence Studies and Analysis (IDSA), February 3, 2017, http://bit.ly/2oyg6nZ
[10] Air Marshal (Retd) Muhammad Ashfaque Arain, (Director General Air Force Strategic Command), in an emailed interview to the author on May 11, 2018.
[11] "Land Warfare Doctrine – 2018," Indian Army, December 2018, 5, https://bit.ly/2ALwRSv

nuclear weapons and may not fight a total war but the possibility of limited conflict cannot be ruled out in South Asia.[12] At this stage, according to Ladwig and Vipin Narang, India may lack the capacity to fully operationalise its aggressive CSD against Pakistan.[13] However, the rapid military modernisation will inevitably help the Indian Army to fill the gaps and operationalise its limited war doctrine against Pakistan.

To execute any aggressive operation against Pakistan, India must train and equip its ground forces with modern training patterns along with modern weapon and equipment. In pursuit of this goal, the Indian Army launched the Future Infantry Soldier as a System- (F-INSAS) programme in 2005.[14] It was an ambitious programme which could not achieve its desired goals and the Indian Army had to replace it with two other separate programmes:

i) The Battlefield Management System
ii) Arming the Infantry with better offensive and defensive gear.[15]

The Indian Army inducted 65,000, 7.62 mm rifles for special operations and close combats.[16] The second component was to equip the infantry soldier with Network Centric Warfare (NCW) capabilities and connect the soldiers with field commanders and central command to enhance synergy, integration and coordination, which is a prerequisite for any limited war in South Asia.

i) Acquisition of T-90- Tanks: Quick Manoeuvres

The Indian Army considers T-90 Main Battle Tank (MBT) as a backbone of any offensive operations. The India Army operates about 124 homemade Arjun tanks, 1,950 T-72 tanks and 900 T-90 tanks with upgraded night

[12] S Paul Kapur, *Dangerous Deterrent: Nuclear Weapons Proliferation and Conflict in South Asia* (Singapore: NUS Press, 2009), 101.
[13] Vipin Narang and Walter C Ladwig III, "Taking 'Cold Start' out of the freezer?," *Hindu*, January 11, 2017, https://bit.ly/2B6DDlO
[14] B S Chauhan, "F-INSAS Programme: Future Infantry Soldier as a System - A Reality Check," *Indian Defence Review* 30, no. 2 (April-June 2015), http://bit.ly/2r7pr5f
[15] "Programmes at a Glance," *Soldier Modernisation 16* (Winter/Spring 2015): 32, http://bit.ly/2sb7Jkx
[16] Abhishek Saksena, "Indian Army's Future Infantry Soldiers to Get Lethal Weapons and Better Protection," *India Times*, January 18, 2017, http://bit.ly/2rjl6uQ

vision capabilities.[17] It has also placed an order of 464 T-90 MBTs worth US$2 billion from Russia. These tanks would provide the Indian Army with an offensive punch and greater outreach. Currently, the Indian Army operates 18 regiments of T-90 MBTs, which are deployed in the Punjab and Rajasthan sectors for Pakistan specific operations.[18]

By 2020, India is planning to replace all of its ageing fleet with 35 T-90S tank regiments.[19] T-90 is equipped with 125 mm gun; it can fire different types of ammunition which includes Armour Piercing Discarding Sabot (APDS), High-Explosive Anti-Tank (HEAT) and shrapnel projectiles.[20] It is also equipped with anti-tank guided missiles which take only 11.7 seconds to reach the target at a distance of 4,000 meters. It can take down low flying helicopters within the range of up to 5 km.[21] All these features make T-90 tank a lethal machine with destructive firepower and superior manoeuvrability in the desert and plain areas against Pakistan.

ii) Advanced Artillery: Enhanced Firepower

1) M777A2/LW155 Ultralight Howitzers

The Indian Army has started speedy work to develop artillery guns with long range, enhanced mobility and destructive firepower. In that context, India has carried out a deal of US$737 million with the US for the supply of highly advanced M777A2/LW155 ultralight howitzers to add greater firepower in the forces positioned at the Line of Control (LoC).[22] These guns are designed to fire five rounds in two minutes at 30 km distance. India will take delivery of these guns in the next three years.[23] This collaboration

[17] "India's MoD Approves T-90MS Acquisition from Russia," *TASS-Defence,* November 9, 2016, http://bit.ly/2rjuwGA
[18] Ibid.
[19] "T-72BU / T-90 (Obiekt 188) Tank," Global Security, March 19, 2017, http://bit.ly/2t9hm0a
[20] "T-90S Main Battle Tank, Russia," Army-Technology, March 19, 2017, http://bit.ly/2rOGvjc
[21] Ibid.
[22] Seerat Chabba, "Indian Military Power: 145 Howitzer Artillery Guns to be Delivered by BAE Systems in $737 Million Deal," February 12, 2016, http://bit.ly/2rjs82V
[23] Ibid.

would revamp India's indigenous defence industry and enhance its firepower at the border.

2) Dhanush 155 mm Artillery

India has developed an indigenous 155 mm/45 calibre artillery gun called 'Dhanush.' It can take out long-range targets with greater accuracy. This gun is equipped with highly advanced electronic and computing systems. The former Indian Defence Minister, Manohar Parrikar, said that "Dhanush artillery had successfully met all technical parameters."[24] The induction of Dhanush would add teeth to the ageing Indian artillery capabilities because this gun has a range of about 38 km as compared to the range of the existing Bofors guns, which is 27 km.[25] Such highly sophisticated artillery will be a great challenge for the Pakistani forces deployed at the LoC or International border.

3) Advanced Towed Artillery Gun System (ATAGS)

The Indian Defence Research and Development Organisation (DRDO) is working on an advanced version of the Dhanush artillery which would have a calibre of 155 mm/52.[26] ATAGS would be ready for production by 2019.[27] The long range, lightweight, advance electronics and computing of these guns would be a great boost for the Indian Army. ATAGS are designed for hilly and rough territory like that along the LoC. These guns could be transported with heavy lift helicopters which India has already acquired from the US. They will add greater firepower and an offensive punch to capabilities of the Indian Army.

4) K9-Vajra 155 mm/52 Artillery Guns

The Indian Army is in the process of acquiring K9 Vajra 155 mm/52 calibre guns from South Korea under US$720 million contract. This artillery gun has an effective range of about 40km and it has recently passed all the trials.

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[24] Ibid.
[25] Danvir Singh, "Dhanush 155 mm Artillery Gun: A 'Make in India' Marvel," *Indian Defence Review* 30, no 2, (March 2016), http://bit.ly/2sQAoZW.
[26] Ibid.
[27] Ibid.

The Indian Army would get 100 K9 Vajra guns by 2020.[28] The K9 Vajra would support the Indian mechanised forces and provide close fire support during any offensive operations against Pakistan.[29] To counter these developments, Pakistan must also get long-range artillery guns with superior firepower and mobility. Pakistan must also induct Weapon Locating Radars to detect and target the Indian artillery guns in case of hostilities along the LoC or international border.

iii) Procurement of Long-Range Air Defence Systems

1) S-400: Long-Range Air Defence System (LR-ADS)

S-400 is a perilous threat to an enemy's aircraft, Unmanned Ariel Vehicles (UAVs) and missiles. India and Russia signed a deal for S-400 in 2016.[30] S-400 would create a strategic imbalance in South Asia. It has the potential to engage 36 targets simultaneously.[31] This air defence system will provide the Indian military with the ability to detect the Pakistani aircraft, missile or drone at a distance of about 600 km and destroy them at 400km, which means Pakistan's air force would be highly vulnerable against such a highly advanced air defence system.[32] Lt General (Retd) Zahid Latif Mirza stated that "S-400 is a game changer. The Pakistani policymakers will have to sit together and come up with an adequate response. S-400 would have High to Medium Air Defence (HIMAD) attributes and it can take out anything in the Pakistani air space, aircraft, missiles or UAVs."[33] S-400 would protect sensitive civil or military installations, major cities, missile sites, nuclear facilities and command and control centres. It would be almost impossible for an aircraft to evade the S-400 missile, which travels at a speed of 17,000

[28] Rahul Singh, "India World's 5th Largest Military Spender: 7 Weapon Systems Govt is Buying," *Hindustan Times*, April 27, 2017, http://bit.ly/2EJcc4B
[29] Franz-Stefan Gady, "India's Newest Gun: Fast and Deadly," *Diplomat*, October 9, 2015, http://bit.ly/2CnBe49
[30] "India to Buy S-400 Missiles from Russia," *Hindu*, October 16, 2016, http://bit.ly/2owN6Li
[31] "India to Buy Game Changer S-400 Air Defence System from Russia," *Economic Times*, October 15, 2016, http://bit.ly/2nwkilt
[32] Pranab Dhal Samanta, "Russian S-400 Triumf gives India an edge against Pakistan, China," *Economics Time*, October 17, 2016, http://bit.ly/2owIBk7
[33] Lt General (Retd) Zahid Latif Mirza, (Former Commander of Pakistan Army Air Defence Corps), in an interview to the author on April 26, 2018.

km/h.[34] The induction of S-400 means that India would control the air space of Pakistan[35] and any aircraft, UAV, missile, or helicopter would be on its radar for timely countermeasures.

2) Barak-8

Since 2003, the Indian military has been using the Barak-1 air defence system, which provides defence against short-range aircraft and missiles.[36] In 2017, the DRDO and Israeli Aerospace Industries signed a US$2 billion contract to equip the Indian military with Barak-8 air defence system. The Indian Army would get one regiment of sixteen launchers and 560 missiles. India is also aiming to deploy Barak-8 missiles on the indigenously-built aircraft carrier INS *Vikrant*. Both countries are working to equip nine squadrons of the Indian Air Force (IAF) with the Barak-8.[37] The Barak-8 system can carry a warhead of about 60 kg with a speed of Mach-2 at the 70-100 km range.[38] It is a highly advanced air defence system which creates a shield around premium assets and thwarts any aerial threat with greater speed, precision and accuracy.

b) Modernisation of the Indian Air Force

After the US, Russia and China, the IAF is the fourth largest air force in the world. It has more than 170,000 men and operates from 60 airbases in India.[39] The IAF consists of 33 squadrons, whereas for air superiority vis-à-vis Pakistan, it must possess 42 squadrons. To achieve this goal, the IAF will add more than 400 aircraft in future.[40] Currently, the IAF has an active

[34] Naveed Ahmad, "Analysis: Will India's S-400 Missiles Checkmate Pakistan?," *Express Tribune*, April 29, 2016, http://bit.ly/2ntghxe
[35] Petr Topychkanov, "Where Does Pakistan Fit in Russia's South Asia Strategy?," Carnegie Endowment, January 16, 2017, http://ceip.org/2opgYN5
[36] EfraimInbar and Alvite Singh Ningthoujam, "Indo-Israel Defence Cooperation in the Twenty-first Century," Rubin Centre, December 22, 2011, http://bit.ly/2sXad4f
[37] "Israel to 'Make in India' after Signing $2 billion-dollar Defence Deal with India," *Times Now*, April 7, 2017, http://bit.ly/2ue2b6K
[38] Syed Ramsey, *Tools of War: History of Weapons in Modern Times* (United States: Alpha Editions, 2016), 33.
[39] "Indian Air Force," Global Security, March 24, 2017, http://bit.ly/2saT1ds
[40] "400 more Fighter Jets in Indian Air Force's Vision 2030," *Hindustan Times*, May 26, 2016, http://bit.ly/2rexTnj

fleet of 806 fighters along with 82 special mission aircraft, 7 refuelling tankers, 232 transport aircraft, 652 helicopters and 325 training aircraft.[41]

i) Procurement of SU-30 MKI Aircraft: Close Air Support

The IAF is largely dependent on its multi-mission SU-30MKI aircraft, which has the ability to deliver different types of warheads. Presently, the IAF flies more than 200 SU-30MKI aircrafts and it has placed an order with the Russian defence firms for another 53 aircrafts.[42] The SU-30 is a multirole aircraft with lethal firepower, advanced avionics and greater manoeuvrability. It is equipped with a 30mm Gsh-30-1 cannon with 150 rounds of ammunition and BrahMos cruise missiles. The SU-30 is an air superiority aircraft with an effective range of 3,000 km.[43] This aircraft will be a key element in any offensive strategy of the Indian military.

ii) Induction of Dassault Rafael Aircraft

India has also placed an order for the procurement of 36 Rafael aircraft with France under a deal worth US$8.7 billion. Rafael can carry different warheads at 1,850km with a maximum speed of 1,915kmh.[44] It is equipped with lethal missiles, which can hit the target within 10m precision. Rafael is fitted with a twin gun pod and a Nexter 30 mm DEFA 791B cannon, which can fire 2,500 rounds in one minute. It is armed with laser designation pods for precision targeting from air to ground along with modern electronic warfare capabilities, which enables it to track eight different targets simultaneously.[45] Rafael would give India an option to carry out short-and long-range missions against Pakistan.

[41] "World Air Forces-2017," Flight Global, March 18, 2017, 5, http://bit.ly/2r7O55w
[42] Ibid., 10.
[43] "Su-30MKI Multirole Fighter Aircraft, India," Airforce-Technology, http://bit.ly/2r7Gm7v
[44] "Dassault Rafael Multi-role 4th Generation Fighter," Military Factory, March 18, 2017, http://bit.ly/2sb5ZI6
[45] "Rafale Multirole Combat Fighter, France," Airforce-Technology, March 18, 2017, http://bit.ly/2rjpfPn

iii) Transport and Logistics Capabilities of the Indian Military

1) C-130J Hercules Transport Aircraft

The Indian Military procured highly advanced transport and logistics aircraft C-130J Hercules from the US to augment its strategic reach in South Asia.[46] Currently, the Indian military possesses five C-130J Hercules aircraft and it has planned to procure six more in future.[47] This transport aircraft is good for logistics, special combat operations in a harsh environment and rescue operations in tough terrains.[48] C-130J can hover up to 26,000 ft along with 20,227 kg logistics, ammunition or supplies. The maximum speed of C 130-J is 410 mph and it has the ability to conduct operations at a distance of 1,956 miles.[49] The procurement of C-130 aircrafts would enhance the IAF's reach and operational capability to conduct tactical operations in harsh weather conditions without any time barrier.

2) C-17 Globemaster-III Aircraft

The IAF procured C-17 Globemaster transport and logistics aircraft to uplift transport and logistics capacity of its military.[50] It has bought 10 Globemaster aircraft from the US defence firm Boeing at the cost of US$4.1 billion to boost its capability to supply crucial logistics, food, supplies, ammunition and reinforcements during a conflict at high altitude or tough terrain.[51] The C-17 has the ability to carry 80 tons of logistics along with

[46] Stephen P Cohen and Sunil Dasgupta, *Arming without Aiming: India's Military Modernisation* (Washington DC: Brookings Institution Press, 2009), 24.
[47] "India to Get Six C-130J Transport Aircraft in 2017," *Defence World*, March 30, 2016, http://bit.ly/2reAHAX
[48] "C-130J Super Hercules," Lockheed Martin, March 20, 2017, http://lmt.co/2m1cH0H
[49] Joakim Kasper, "C–130 Hercules," *Forecast International*, May 26, 2015, http://bit.ly/2sgSQxR
[50] Harsh V Pant, *Handbook of Indian Defence Policy: Themes, Structures and Doctrines* (New York: Routledge, 2016), 85.
[51] "India Plans to Acquire Ten C-17 Globemaster III from Boeing," *Airforce-Technology,* March 20, 2017, http://bit.ly/2r7HcRH

150 soldiers with their full gears.[52] Procurement of C-17 aircraft would improve the Indian military's overall transport and logistics capabilities and add offensive punch to conduct military operations across the LoC or deep inside Pakistan.

3) Chinook Heavy Lift Multi-Purpose Helicopters

India has signed a deal with the US to acquire fifteen highly sophisticated Chinook helicopters worth US$833 million. The Chinooks are multi-mission helicopters, mainly utilised in specialised operations, transportation of logistics, ammunition and supplies in all weather conditions.[53] The induction of Chinook would augment the Indian military's capabilities to quickly supply logistics, Special Forces and weapons in difficult conditions with greater speed, agility and swiftness to achieve objectives underlined in the limited war doctrines by the Indian armed forces. These helicopters are vital for specialised operations as envisaged by the Indian military. Future wars in the South Asian strategic setting would entail limited, intense and swift operations against an adversary to achieve tactical victories and element of surprise.

4) Apache Attack Helicopter

India aims at quick and swift operations under a nuclear umbrella but it lacks the speed and manoeuvrability to execute the CSD or also known as Proactive military strategy.[54] To add agility and greater firepower in its military, it has signed a deal with the US to induct 22 Apache Helicopters worth US$2.5 billion.[55] This helicopter is crucial for India to operationalise its aggressive military doctrines. The Apache is equipped with night vision capabilities, hellfire missiles, 70 mm rockets and an automatic gun, which makes it the most lethal machine in the world. The

[52] Sudhi Ranjan Sen, "Indian Air Force Inducts C-17 Globemaster, its Biggest Transport Aircraft" *NDTV*, September 3, 2013, http://bit.ly/2sh3c0D
[53] Shishir Gupta and Rahul Singh, "Defence Ministry Okays deals worth over $3bn to buy 15 Chinook, 22 Apache Copters," *Hindustan Times*, May 26, 2015, http://bit.ly/2rOydrj
[54] "Cold Start - A Mixture of Myth and Reality," WikiLeaks, February 16, 2010, http://bit.ly/2rjAjfj
[55] "Here is why Apache and Chinook Helicopters are Game Changers for India," *Economic Times*, March 20, 2017, http://bit.ly/2sgVrb6

Apache would add agility and greater firepower to the Indian ground forces for any quick and intense operations against Pakistan.

c) Refurbishment of the Indian Navy: Maritime Dominance

India is rapidly modernising its navy and filling up the operational gaps in its maritime war-fighting capabilities. The main thrust areas for the Indian Navy are the Bay of Bengal, the Indian Ocean and the Arabian Sea. To control these areas, it has established three naval commands, at Vishakhapatnam, Kochi and Mumbai.[56] According to Harsh V Pant, "The Indian Ocean will be the centre of an emerging geopolitical competition between China and India. Pakistan seems to have decided to work with China to balance India."[57] Consequently, India has allocated at least US$8 billion to modernise its naval fleet.[58] The fact that 90 per cent of India's trade is carried out through sea has compelled successive governments to maintain a huge navy to protect its maritime interests and establish maritime hegemony.[59] It maintains 171 vessels along with more than 250 aircraft and 16 submarines. India is the only South Asian country with an aircraft carrier and, by 2020, it plans to maintain three aircraft carriers for ensuring its dominance in the Indian Ocean Region (IORs).[60] However, according to the experts, the aircraft carrier is more of a liability than an asset in South Asia. The former Air Chief Marshal, (Retd) Tahir Rafique Butt, believes that the Indian Aircraft Carrier in the South Asian context has little significance, he said:

> To threaten Pakistan, India has to keep it (aircraft carrier) 600 miles away from Pakistan, because we may kill it in two days. It would be national mourning for them, their flag would be on the half-mast that Aircraft carrier has been destroyed. We have weapons that can hit 200 km away. So, I think (Indian) Aircraft Carrier has not much relevance as far as Pakistan is concerned.[61]

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[56] "Indian Navy: Commands," *Indian Navy*, March 23, 2017, http://bit.ly/2sQCn0o

[57] Harsh V Pant, (Professor of International Relations in the Defence Studies at Kings College London), in an emailed interview to the author on October 11, 2017.

[58] Pauline Eadie and Wyn Rees, *The Evolution of Military Power in the West and Asia: Security Policy in the post-Cold War Era* (New York: Routledge, 2016), 173.

[59] Masood-Ur-Rehman Khattak, "Indian Naval Modernisation: Implications for Pakistan," *Eurasia Review*, December 25, 2011, http://bit.ly/2rODD5K

[60] Chietigj Bajpaee, "Naval Build-up Reflects India's Ambition to Project Power," *Deutsche Welle*, February 23, 2015, http://bit.ly/2rjA8kk

[61] ACM Tahir Rafique Butt, (Former Chief of Air Staff of the Pakistan Air Force), in an interview with the Author on November 23, 2017.

Another senior officer of the Pakistan Navy takes the induction of aircraft carrier as a mere power projection which has little value against Pakistan. Vice Admiral (Retd) Muhammad Haroon evaluates that "it is just projection of power, now they put their nose into South China Sea where they think they will be able to dominate the Chinese, which I don't think so. However, in the Indian littoral, it does make an impression. Fine, it would be a good target for our submarines."[62]

However, the Indian Navy is also planning to develop five nuclear submarines, which would provide India with greater manoeuvrability and assured Second Strike Capability vis-à-vis Pakistan and China, in future.[63] These nuclear submarines will be equipped with Sagarika (K-15), Submarine Launched Ballistic Missiles (SLBMs) with 3,500 km range.[64] This will enhance India's offensive prowess and add to its greater strike capability against Pakistan. Apart from nuclear submarines, India has been negotiating a contract with France to procure highly advanced Scorpene submarines worth US$3.5 billion, equipped with modern weapon and equipment. These submarines possess stealth capability, superior detection range and advance command and control system for dominance in the IOR.[65]

The Indian Navy has inducted the BrahMos cruise missile which has a range of about 290 km. The upgraded version of BrahMos would have a range of about 450 km. India is working on the hypersonic BrahMos-II missile to destroy deep underground bunkers and arms storage sites with greater speed of 8,575 km/h.[66] The BrahMos-II would be a grave threat for Pakistan's maritime clout in the IORs. Additionally, the Indian Navy has inducted eight P8-I, Long-Range Maritime Reconnaissance and Anti-Submarine Warfare-(LRMR/ASW) aircraft from Boeing worth US$2.1

[62] Vice Admiral (Retd) Muhammad Haroon, (Former vice Chief of Naval Staff), in an interview with the Author, November 22, 2017.
[63] Harsh V Pant, *The Rise of the Indian Navy: Internal Vulnerabilities, External Challenges* (London: Routledge, 2016), 134.
[64] "India Submarine Capabilities," Nuclear Threat Initiative, September 30, 2015, http://bit.ly/2sbeYsD
[65] "India Investigating French Submarine Company Data Leak," *BBC,* August 24, 2016, http://bbc.in/2buSomC
[66] Rahul Singh, "From 290 km to 450 km: India to soon test Extended Range BrahMos Missile," *Hindustan Times,* February 16, 2017, http://bit.ly/2r7ImN2

billion. This aircraft is highly sophisticated and equipped with advanced features, which include lethal Harpoon Block-II missiles, MK-54 lightweight torpedoes and depth charges. Besides, P8-I has the ability to detect incoming threats way before they get near to the Indian strategic assets at sea. It can fly at a maximum speed of 907 km/h to carry out operations over an area of 1,200 nautical miles.[67] According to Air Chief Marshal Rafique, "P-I can pick up the deployment of our Submarines and if they are not careful and not capable of self-defence they can launch their torpedoes."[68] Pakistan's vessels, aircraft, UAVs and submarines would be under grave threat of detection and obliteration. With a superior naval force, India may carry out a naval blockade of Pakistan along the same lines as the 1971 war.[69] According to Ashley J Tellis, "India is and will remain, the dominant naval power in the Indian Ocean. Other than the US, the Indian Navy will be the most powerful navy in the IOR for a long time to come."[70] With these capabilities, the Indian Navy would emerge as an indomitable force in the IOR that may undermine Pakistan's maritime interests in the region.

d) Network Centric and Electronic Warfare Capabilities

i) Battlefield Surveillance Radars (BFSRs)

The DRDO has developed short-range BFSRs to detect multiple targets in a specific area. BFSR is highly mobile and lightweight (15 kg). This radar can detect, track and classify targets like creeping men and a group, light and heavy combat vehicles and low flying helicopters.[71] These reconnaissance capabilities are essential for the limited or special operations in the Indo-Pak context.

ii) The Weapon Locating Radar-(WLR)

[67] "Indian Navy's Boeing P-8Is Dedicated to the Nation: 7 Facts about Surveillance Aircraft," *Economic Times*, November 13, 2015, http://bit.ly/2rOI4NV
[68] Butt, 2017.
[69] Rasul Bux Rais, *The Indian Ocean and the Superpowers* (New Jersey: Barnes & Nobel Books, 1987), 167.
[70] Ashley J Tellis, (Senior Fellow at the Carnegie Endowment for International Peace, Washington DC), in an emailed interview to author, November 4, 2017.
[71] "Battlefield Surveillance Radar," Defence Research and Development Organisation (DRDO), March 17, 2017, http://bit.ly/2rOUs0x

India has indigenously developed and installed four WLR at the LoC to detect the range and location of Pakistan's artillery, mortar shells and short-range rocket sites at about 50 km distance.[72] The Indian Army Chief, General Rawat, claimed that "the WLR is being used extensively along the LoC…." Parrikar also said that these WLRs prevented Pakistan from using artillery at the LoC.[73] The WLR can store up to 99 weapon locations tracked and can share it with a central command for countermeasures.[74] These electronic warfare capabilities in the Indian Army would undermine Pakistan's strategic position along the border.

iii) Airborne Early Warning and Control System (AeW&CS): Eye in the Sky

In 2017, India developed an AeW&CS, popularly known as the 'eye in the sky.' This aircraft can track incoming missiles, aircraft and UAVs from Pakistan. The AeW&CS is equipped with 240-degree coverage radar to identify incoming threats at a safe distance of 200 km and relay that information to command centres for preventive measures.[75] The development of the AeW&CS would augment the IAF's surveillance capabilities of the along with greater flexibility, outreach and space for prompt action against aerial threats.

iv) Designate Spy Satellites: Army, Air Force and Navy

In 2009, the Indian military launched a spy satellite, RISAAT-II,[76] to maintain round the clock vigilance on Pakistan.[77] The Indian Space Research Organisation (ISRO) has also invested INR400 million to develop Radar Sat.[78] The former Chief of the DRDO, Vijay Kumar Saraswat,

[72] "Army gets Weapon Locating Radar from DRDO," *Economic Time*, March 03, 2017, http://bit.ly/2sQAGQJ
[73] Ibid.
[74] "Indian Army to Induct Swati Gun Locating Radars," Defence and Security Monitor, April 4, 2015, http://bit.ly/2t8Ywqk
[75] Chethan Kumar, "Indian Air Force to Get Made-In-India AWACS Planes to Look Deep into Pakistan and China," *India Times*, January 05, 2017, http://bit.ly/2rjNM74
[76] Ram Narayan Kumar, *Martyred but Not Tamed: The Politics of Resistance in the Middle East* (New Delhi: SAGE Publications, 2013), 228.
[77] G D Sharma, *Space Security: Indian Perspectives* (New Delhi: Vij Books, 2011), 85.
[78] Masood-Ur-Rehman Khattak, "Indian Military's Space Programme: Implications for Pakistan – Analysis," *Eurasia Review*, June 10, 2011, http://bit.ly/2saZCVj

claimed that India is planning to add a few satellites every year to fulfil the requirements of tri-services. He reiterated that "Once these satellites are operational, we will be able to see troop movement along the borders."[79] The ISRO launched another satellite GSAT-7 (Rukmini) to enhance its maritime surveillance capabilities in the IORs.[80] The Indian Navy claimed that the GSAT-7 "seamlessly networked" around 60 warships and 75 aircrafts during a month-long naval exercise 'Tropex' in the Bay of Bengal.[81] The induction of GSAT-7 is a great development for the Indian Navy, which uses space for strategic and national security-related operations. The GSAT-7 would provide the Indian Navy with a 3,500-4,000 km footprint over the IOR and enables real-time networking of assets on land and sea. In 2015, India launched GSAT-6 for the Indian Army. The GSAT-6 is believed to be crucial for the soldiers operating in rough terrain and harsh weather conditions with safe and secure communications.[82] India's investment in space satellites will revamp the surveillance and reconnaissance capabilities of their armed forces, enabling them to gain an advantage in obtaining real-time information about Pakistan's disposition and deployment.

v) Procurement of Israeli Heron UAVs

With the help of Israel, the Indian military has been improving its observation capabilities since 2001. It has deployed UAVs against Pakistan to monitor the deployment and movement of troops and alleged Kashmiri fighters at the LoC.[83] In 2003, India ordered 18 highly sophisticated UAVs worth of US$130 million.[84] The Heron UAVs are highly advanced and provided superiority to the Indian military in the reconnaissance and surveillance domain. These UAVs could be used for strategic and tactical missions across the border. Another important induction in the Indian UAV squad is Israeli Heron-TP. This drone has 45-hour endurance time. India has

[79] Ibid.
[80] "What is GSAT-7 Rukmini?" *Indian Express*, July 5, 2017, http://bit.ly/2BCNwc3
[81] David B H Denoon, ed., *China, the United States and the Future of Southeast Asia: US-China Relations* (New York: New York University Press, 2017), 278.
[82] Marco Aliberti, *India in Space: Between Utility and Geopolitics* (Vienna: Springer, 2018), 181.
[83] Sanjeev Miglani, "India turns to Israel for Armed Drones as Pakistan, China Build Fleets," *Reuters*, September 22, 2015, http://reut.rs/1YyMJwx
[84] Robert O Freedman, *Contemporary Israel* (Boulder: West View Press, 2010), 442.

signed a US$400 million deal to procure ten Heron-TP drones for likely missile strikes across the border to target alleged positions of the insurgents.[85] Such capabilities would be detrimental to Pakistan's security. Though Pakistan has the ability to counter these moves by the Indian military and has the ability to carry out counter strikes if required but such a scenario would be perilous for the peace and stability of the region.

Recommendations for Pakistan

a) Self-reliance: Indigenisation

The Indian military modernisation and doctrinal transformation focus on limited, quick and swift warfare scenarios. Air Marshal Ashfaque believes, "with its current economic state, Pakistan cannot sustain an arms race with India. However, Pakistan has to rely on indigenous weapon production as well as superior training and strategy to counter conventional imbalance with India."[86] For Pakistan, it is pertinent to improve its overall conventional capabilities to fill the operational gaps to give a quid pro quo response to any adventurism by the Indian military under the nuclear overhang. Brigadier (Retd) Feroz Hassan Khan recommends that "[Pakistan must] develop such defences and strategies which make it costlier for your enemy to indulge in conflict with you."[87] Pakistan military must improve its night vision capabilities, induct long-range air defence system to counter incoming missiles, UAVs, or the Indian aircraft. To balance, the Indian Army's acquisition of highly sophisticated T-90 tanks, Pakistan must acquire ATGMs and also enhance the quality, speed, range, firepower, thermal imaging, and manoeuvrability of Al-Khalid tanks, mechanised forces and C4I vehicles. The former Chairman Joint Chiefs of Staff Committee, General (Retd) Ehsan Ul Haq, emphasised the need for more aircraft in Pakistan Air Force, stated,

> My own view is that you need an addition to aircraft, you need bigger numbers. We must go for the fifth-generation aircraft wherever it is available. Today we are in a position that we can upgrade the JF-17

[85] Joseph Noronha, "The Promise of Soft kill," *Indian Defence Review* 26, no. 2 (June 2011), http://bit.ly/2t93uDp

[86] Air Marshal (Retd) Muhammad Ashfaque Arain, (Director General Air Force Strategic Command), in an interview with the Author on May 11, 2018.

[87] Brigadier (Retd) Feroz Hassan Khan, (Research Professor at Naval Post Graduate School, US), in an interview with the Author on October 16, 2017.

> better. We must possess 300 JF-17s and about 100 F-16s and other aircraft from West or the Russians but our workhorse will be upgraded JF-17 Aircraft.[88]

Pakistan military must improve synergy and coordination among its wings, assimilate EW & NCW capabilities and focus on anti-weapons to outset the Indian military's conventional superiority in future.

b) Credible Nuclear Deterrence: Second Strike Capability

With its huge economy, the Indian government would try to outnumber Pakistan in conventional arms. It is necessary for Pakistan to maintain adequate conventional capabilities backed by credible nuclear deterrence to fill the gaps in conventional asymmetries. Former Ambassador to India, Abdul Basit, emphasised on the importance of nuclear weapons to deter conventional wars, in following terms:

> We will not like our deterrence to fail and secondly, Pakistan is not in an arms race with India. We will maintain our deterrence at a minimum level. If India becomes irrational in its approach vis-à-vis Pakistan and leaves no option for the country, then Pakistan would have no other option but to use Tactical Nuclear Weapons (TNWs).[89]

Lt General (Retd) Naeem Khalid Lodhi considers nuclear weapon as a great deterrent against a numerically superior adversary, stating that "so with nuclear weapons with us, I do not think we need to have any arms race but we must remember one thing that within the realm of nuclear weapons you have to maintain a certain level of penetrability, ranges and the accuracy so that the deterrence works."[90] In that context, Pakistan must work on the assured Second Strike Capability to safeguard its nuclear assets and C4I system from any decapitation strike. Pakistan military may come up with more deep underground tunnels, concealment measures, strong air defence around strategic sites and mobile warheads to achieve Second Strike Capability. However, the most desirable way to get the assured

[88] General (Retd) Ehsan Ul Haq, (Former DG-MI, DG-ISI and CJCSC), in an interview with the author, January 16, 2018.
[89] Ambassador (Retd) Abdul Basit, (Former Ambassador to India), in an interview with the author, October 11, 2017.
[90] Lt General (Retd) Naeem Khalid Lodhi, (Former Defence Secretary of Pakistan), in an interview with the author on October 22, 2017.

Second Strike Capability is through nuclear submarines with long-range SLBMs. According to Vice Admiral (Retd) Muhammad Haroon, Pakistan must get a nuclear submarine, he was of the view that "the cost of a nuclear submarine or other military systems is much lesser than the embezzlement and corruption that takes place in the country. We can manage it, we can afford it and we can run it better than the Indians."[91] Mark Fitz Patrick views Pakistan's nuclear weapons as a deterrent to the Indian military's conventional superiority:

> India has such a huge advantage over Pakistan in all forms of military spending and modernisation, it is inevitable that India is going to outspend, out modernise, overwhelm in terms of numbers anything Pakistan can do. So, it is understandable that Pakistan sees nuclear weapons as an equaliser to all these advantages that India has.[92]

It is imperative for Pakistan military to improve its robust command and control system, range, precision, penetrability and lethality of its missiles to cater threats emanating from the Indian military modernisation.

c) Advancement in the ISR Capabilities

Pakistan must enhance its ISR capabilities in the South Asian context. Though, it retains surveillance drone with limited range and endurance for recon purposes. It must improve the range, outreach and durability of its UAVs, AWACS or other surveillance assets to get real-time information about the adversary's disposition, deployment and movement for adequate countermeasures. Enhanced ISR capabilities would deny the adversary from element of surprise and give ample time to Pakistan for an effective response. Pakistan military lack in the domain of space satellites for military purposes, however, Pakistan has surveillance and reconnaissance capability in some F-16/JF-17 Thunder electronic pods but what overall a spy satellite can do, Pakistan cannot do that at the moment. This is one area where Pakistan military needs to focus and invest in future. The enhancement of ISR capabilities will enable Pakistan military to find out the Indian military's dispositions, deployment and movement during peace and wartime for effective countermeasures.

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[91] Haroon, 2017.

[92] Mark Fitzpatrick, (Executive Director of IISS), in an interview with the author on December 06, 2017.

d) Synergy and Integration in the Armed Forces

Future wars are likely to be limited, quick and intense because of nuclear weapons and revolution in military affairs. It must be an indispensable part of Pakistan's defence strategy to attain synergy and assimilation among all branches of the military to give an adequate response to any aggression by the Indian military. To achieve synergy and integration, the Pakistan military must improve its C4I system for seamless and synchronised operations in a highly network centric environment. Moreover, Pakistan military must conduct regular joint military exercises to validate its war concepts and learn new tactics to have an edge in modern warfare scenarios.

Conclusion

The Indian military's massive build-up and the aggressive doctrinal shift will undermine deterrence stability in South Asia. After careful assessment, it could be argued that current conventional asymmetries between India and Pakistan are manageable at the moment. But in future, it may become difficult for Pakistan military to match the overwhelming conventional disparities especially in the field of long-range air defence, nuclear submarines, armed UAVs and long-range maritime surveillance aircraft and spy satellites. Pakistan needs to invest in anti-weapons, long-range air defence systems to get capabilities to cater the stand-off capability of the Indian aircraft and to counter any other aerial threats in the shape of high altitude long range armed UAVs and different types of ballistic or cruise missiles. To counter enhanced capabilities of the Indian forces, Pakistan military must work on long-range highly advanced anti-tank guided missiles. These capabilities would reduce the pace of the Indian mechanised forces in case of any rapid manoeuvrability in the plain or desert areas. Pakistan must improve range, precision and lethality of its ballistic and cruise missiles and increase the number of Multiple Independent Re-entry Vehicles (MIRVs) to cater to the long-range air defence systems of India.

Moreover, to achieve assured Second Strike Capability, Pakistan must acquire nuclear submarines along with long-range SLBMs. Pakistan military must enhance its ISR capabilities, induct AWACS, long range/endurance UAVs for the surveillance and reconnaissance deep inside India. In this context, Pakistan must also invest in the space assets/spy satellites for the real-time information about adversary's position,

deployment pattern, strategic sites and movement of troops etc. With these capabilities, Pakistan can tackle with the Indian military any advantage in the conventional domain and mitigate the chances of any limited war under the nuclear umbrella. India must realise that use of force is not the solution to any problem in the nuclear environment. It is necessary that both countries must show some flexibility and try to resolve their issues with a consistent yet meaningful dialogue process.