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IN PURSUIT OF NATIONAL SECURITY

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CENTRE FOR AIR POWER STUDIES

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EDITOR'S NOTE

The 'magic' associated with the dawn of a new year heralds the hope that the world will become a better and safer place, that peace will be largely maintained, no major calamities will occur, and, most importantly, the scourge of terrorism and militancy will be contained. Unfortunately, the 'hope' is accompanied with the realisation that, given human greed and frailties, not much is likely to change and the best we can expect is that no untoward eventuality of any form occurs during the year. That represents a reasonable expectation. Life should continue in its merry way and, on our part, we promise to continue to give our readers articles that are informative, at times even educative, but always those that make good reading.

As usual, this edition contains articles that encompass many different themes. However, one change that will be noticed is that we have introduced a section titled 'Book Reviews'. Books for review will be chosen selectively and we hope to give our readers reasons why the book should be read in its entirety. It is hoped that our readers will value this initiative. In this edition of the journal, two books have been reviewed. They are *Safeguarding India: Essays on Governance and Security* by Shri NN Vohra, Governor of Jammu and Kashmir (J&K); and *India's Nuclear Energy Programme: Future Plans, Prospects and Concerns* edited by Professor R Rajaraman, Professor Emeritus Jawaharlal Nehru University (JNU).

India's relations with the erstwhile USSR and then with Russia have been strong and stable. Of late, Russia-China cooperation in a host of fields, and even a growing Russia-Pakistan relationship has been noticed. Should this be a matter of some concern to India? **Chandra Rekha** examines the issue from a number of different angles,

starting from 1947 and how the relationships have altered with the changing circumstances. The inescapable conclusion must be that our interests will not be overlooked by Russia in spite of present day compulsions on both sides.

President elect Trump's victory at the polls surprised many. It is a quirk of the American system that he did not get more votes than his rival but he won. Nor has he held any political office. In his election campaign, he had made many statements that surprised all too many and threatened a major change in US policies. A frequently asked question is that given the American system, what will actually occur after the inauguration on January 20, 2017. **Stuti Banerjee** tries to answer these questions and more.

With Pakistan threatening the use of its nuclear arsenal every now and again, it will be instructive to discuss the nature of Pakistan's nuclear capability, particularly its ballistic and cruise missile programme. **Gp Capt Chhatwal** suggests that the missile programme was given a fillip around 1990 and coincided with the development of nuclear weapons in that country. He traces the history and reiterates the well-recognised fact that considerable technical support was received from China and North Korea and financial support from some others.

China's designs to enlarge its sphere of influence have to be backed by effective military power. An important ingredient of such military power must be a good bomber aircraft that can go far and effectively engage different types of targets. **Arjun Subramanian** opines that the Chinese hope to have a new bomber aircraft by 2025 or so. However, the design has not been frozen so far. Issues of speed, stealth, Electronic Warfare (EW) suite and bomb load have yet to be determined. There are many imponderables to consider and the author examines some of them.

Terrorism will not go away. We have to learn to live with it. Lip-service is paid to the need for concerted action against terrorists but, in reality, countries have to largely fend for themselves. Newer methods are being introduced to inflict terror and the use of 10-14 year old childrens in suicide terrorism should impact the conscience of the world. **Aersh Danish** examines this phenomenon in all its chilling details.

The internet is an engine that absorbs data fed into it, banks it, and ensures that it will not be erased. It is 'an eternal repository with an infallible memory'. This implies that the writer who enters the data loses all control over its usage, both legal and illegal. He may wish to have some data deleted for all time but such feats are beyond his control. For instance, convicts who have served their sentence, have reformed and want to forget the past, cannot wipe the internet slate clean. **Gp Capt Ashish Gupta** examines the associated challenges.

For a long time, man took to the skies in balloons and dirigibles. Such activities were relegated to adventure sports with the advent of, and extremely rapid progress made in, heavier – than – air machines. Now it appears that we have come round full circle with military applications of tethered balloons and possibly, in time, Unmanned Aerial Vehicles (UAVs) and balloon type structures that could stay aloft for long durations at say 60,000-90,000 ft altitude. The high flying long endurance machines could rival low earth orbiting satellites to advantage in terms of both cost and effectiveness. **Gp Capt Vivek Kapur** describes the history and future possibilities of high flying or tethered balloons in greater detail.

The last article is by **Jai Raina** who looks at the significance of UN Resolution L 41 passed by the UN General Assembly by a considerable majority to ban nuclear weapons. The dangers and damage that nuclear weapons can cause are too well known and although a large number of countries favour abolishing them for all time, success is far from guaranteed. However, the mere fact that the proposal was passed by the UN General Assembly is noteworthy.

Best wishes for the New Year.

Happy reading.

EMERGING TRENDS IN RUSSIA-PAKISTAN RELATIONS: SHOULD INDIA BE CONCERNED?

CHANDRA REKHA

The emerging trends in Russia-Pakistan relations are termed as a possible 'detente'—a term used during the Cold War period to describe the relaxation of tensions, hostility and suspicion between the two superpower blocs, the Soviet Union and the United States. Barring the context of 'two superpower blocs', there is, however, a similar development in the bilateral interaction between Moscow and Islamabad. Given the India-Pakistan stressed relationship and Islamabad's anti-India posturing, developments within Pakistan and its bilateral relationships are important to India. The Indian political elites, and the academic community, in particular, have voiced concerns that the current shifting trends in the bilateral relations between Russia and Pakistan could add to the already existing tensions/problems. Apart from the China-Pakistan "all weather friendship", the US' refusal to outrightly renounce Pakistan in its foreign policy interests, and Russia's renewed partnership with Pakistan have caused anxiety and uncertainty in the bilateral partnership between New Delhi and Moscow.

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In order to understand the relations between Russia and Pakistan, it will be useful to look at the major foreign policy trends during the Cold War politics pursued by both countries. It is imperative to investigate the evolution of Pakistan-Russia relations to determine the scope and prospects of this alliance in the coming years and to what degree it would impact India and its relations with Russia.

THE EARLY PHASE OF PAKISTAN'S RELATIONS WITH RUSSIA

Pakistan began its foreign policy through exploration and friendship with all countries, including the erstwhile Soviet Union, after the partition from India in 1947. Pakistan and the Soviet Union agreed to establish diplomatic relations in April 1948, but it was not until December 1949 that Pakistan's Ambassador Jamsheed Marker resumed his assignment in Moscow. The Soviet Union invited Pakistan's first Prime Minister, Liaquat Ali Khan, for an official visit but was unhappy over Liaquat Ali Khan's decision to decline the invitation. Pakistan's distrust of the Soviet Union was well known, which was reinforced by the unearthing of the pro-Soviet "Rawalpindi Conspiracy"[1] in 1951 to dislodge the government in Pakistan. The Liaquat Ali government survived the coup hatched by the leftists and Communists. The main reason behind the coup attempt was to stop Pakistan from becoming a complete US satellite state in the Asian region, after entering organisations like the Southeast Asia Treaty Organisation (SEATO) and Central Treaty Organisation (CENTO)[2], to

1. The 'Rawalpindi Conspiracy' was a failed coup attempt aimed to overthrow the existing government in 1951 with Communist backing. Ayesha Jalal, *The Struggle for Pakistan: A Muslim Homeland and Global Politics* (Harvard University Press, 2014). The coup was planned by Maj Gen Akbar Khan, a senior commander in the Pakistan Army, in conjunction with other military officers and left-wing Pakistani politicians."Rawalpindi Conspiracy Case", *The Nation*, August 27, 2009, http://nation.com.pk/Opinions/Columns/27-Aug-2009/Rawalpindi-conspiracy-case. Accessed on November 18, 2014.
2. In September 1954, the United States, France, Great Britain, New Zealand, Australia, the Philippines, Thailand and Pakistan formed the Southeast Asia Treaty Organisation, or SEATO. The purpose of the organisation was to prevent Communism from gaining ground in the region."Milestones- 1953-1960, South-East Asian Treaty Organisation", US Department of State, https://history.state.gov/milestones/1953-1960/seato. Accessed on September 12, 2014. The Central Treaty Organisation (CENTO), was created as a conventional military alliance in the Cold War climate of the 1950s and served as the central link in the chain of strategic defence pacts against the Soviet Union and its allies established by the Western powers of NATO to the SEATO.http://www.iranicaonline.org/articles/central-treaty-organisation-cento-a-mutual-defence-and-economic-cooperation-pact-among-persia-turkey-and-pakistan-wi. Accessed on September 12, 2014.

acquire substantial economic and military aid. The coup had the support of the Communist/ leftist intellectuals of Pakistan. During the Cold War politics, the Soviet Union's big swing towards India caused anxiety to Islamabad. There were indeed interesting developments in the foreign policy behaviour of these states which failed to accommodate each other's interests. Instances such as the 1960 flight of an American U-2 plane, which took off from the airport in Peshawar and made a reconnaissance flight over the Soviet territory created further predicaments in the Soviet-Pakistan relations.

It is believed that the rapprochement between Washington and Islamabad caused concern to the Soviet political elites, as, throughout the Cold War period, Pakistan was instrumental in assisting the US to penetrate into the South Asian region. The 1971 Indo-Pak War further deteriorated the relations between Moscow and Islamabad, when Pakistan aligned with Washington and Beijing, and the Soviet Union, on the other hand, extended its support the India.

Evidently, there was tension and hostility between the two countries due to the clash of interests, but neither country made any effort to restore the relations. Apprehensions amplified further during the Soviet invasion of Afghanistan as a result of Pakistan's role in the anti-Soviet campaign during its invasion in Afghanistan in 1979. Pakistan gave logistical support to the Afghan Mujahideen in the region in their fight against the Soviet Union. Apart from playing the role of a good ally of the US in the clash between the two superpower blocs, Pakistan viewed the emergence of the Taliban in Kabul as an opportunity to penetrate into Central Asia via Afghanistan. The withdrawal of Soviet troops from the region in 1989 and its implosion in 1990 provided the much needed opportunity for Pakistan to widen its strategic calculus in Afghanistan and also in Central Asia. As the first step to build confidence with the new Afghan regime, Pakistan was one of the three countries, apart from Saudi Arabia and the UAE, which accorded recognition to the Taliban regime. The Central Asian Republics (CARs) under the Soviets had no direct contact with their neighbouring countries, but had a favourable position in Pakistan's national interests mainly due to the geographical

proximity, economic prospects and energy reserves of the region. In addition, Afghanistan is viewed as a buffer state as it offers the most direct access for the Central Asian region to South Asia and the Persian Gulf.[3]

POST COLD WAR RUSSIA-PAKISTAN RELATIONS

The Soviet withdrawal from Afghanistan (1989), the collapse of the Soviet Union, and the end of Cold War politics, diluted the relevance of Pakistan in US foreign policy interests. The US was no longer willing to underwrite Pakistan's economic development and modernisation of its military. There was feeling of dejection and anti-Americanism within Pakistan following the October 1990 suspension of US aid after the implementation of the Pressler Amendment[4] and Islamabad's continued refusal to join the nuclear Non-Proliferation Treaty (NPT).[5] Moreover, the US made it clear that the SEATO pledge applied only to the Communist aggression or subversion. Pakistan's plea to include all kinds of aggression was, thus, not accepted. Another critical development during this period was India's tilt towards Washington by adopting a pro-US foreign policy such as the New Economic Policy (NEP). With the US suspension of financial/military aid, acquisitions from Western defence markets like France and Britain became an expensive affair for Pakistan. All these factors added further hardship as it left Pakistan in uncertainty. Simultaneously, an upward trend in Russia-Pakistan relations was taking place with a series of official visits. President Musharraf's visit in 2003 was followed by the

3. "Russia and Afghanistan", *Institute for the Study of War*, 2013, http://www.understandingwar.org/russia-and-afghanistan. Accessed on October 11, 2014.
4. Pakistan has signed neither the nuclear Non-Proliferation Treaty (NPT) nor the Comprehensive Test Ban Treaty (CTBT). However, UN Security Council Resolution 1172, which was adopted in 1998 after India and Pakistan's nuclear tests earlier that year, called upon those countries to "stop their nuclear weapon development programmes, to refrain from weaponization or from the deployment of nuclear weapons, to cease development of ballistic missiles capable of delivering nuclear weapons and any further production of fissile material for nuclear weapons." Paul K. Kerr and Mary Beth Nikitin, "Pakistan's Nuclear Weapons: Proliferation and Security Issues", Congress Research Service, May 10, 2012, p. 3, http://www2.gwu.edu/~nsarchiv/nukevault/ebb388/docs/EBB035.pdf. It was in this context that the Pressler Agreement was imposed on India and Pakistan by the US Congress that imposed sanctions on both the countries by denial of nuclear technology by the Western world.
5. Ibid.

Russian Foreign Minister Igor Ivanov's visit to Islamabad in the same year. Pakistan's Foreign Minister Khursheed Mahmood Kasuri visited Moscow in 2004, and Prime Minister Shaukat Aziz in October 2005, to attend the Shanghai Cooperation Organisation (SCO) meeting. During the visit, Prime Minister Shaukat Aziz also met with his Russian counterpart, Mikhail Fradkov, to discuss the bilateral relations. Russia gained observer status at the Organisation of the Islamic Conference (OIC) in June 2005 and, Pakistan, during this time, gained observer status at the SCO as a result of Russia's accommodation of its interests, along with China's eagerness to accept Islamabad in the organisation.[6]

On the economic front, there were noticeable developments. Russia had also agreed to return $108 million to Pakistani exporters who had exported articles to the USSR before its disintegration. In 2004–05, the bilateral trade volume reached $320 million from $134.24 in 2003–04 and $100 million in 2002. Around 90 percent of Pakistan's exports to Russia were textile items.[7] It was observed by one of the researchers: "During 2012-13, Pakistan exported goods worth $234.91 million against exports of $206.98 million during 2011-12 while Pakistan's imports from Russia were $108.01 million against only $87.84 million during 2011-12". As regards the trade engagement between the two countries, the prospective areas for economic ties are textiles, oil and gas sector exploration and pipelines. [8]

For Pakistan, relations with Moscow enable it to reap benefits for the following reasons: (a) as an alternate defence market for its military needs; (b) for access to Russian markets for its exports; and (c) to strengthen relations with its Central Asian neighbours by having positive relations with Russia. The permanent membership of Pakistan in the SCO in 2015 has given further impetus to its interests in the region.

6. Fazal-ur-Rahman, "Pakistan's Evolving Relations with China, Russia, and Central Asia", *Slavic-Eurasian Research Centre*, 2007, p. 223, https://src-h.slav.hokudai.ac.jp/coe21/publish/no16_1_ses/11_rahman.pdf. Accessed on November 14, 2014.
7. Ibid., p. 224.
8. Press Release of Karachi Chamber of Commerce and Industry, PR/ 106, Jumada- al-Sani 16, 1435 A.H, April 17, 2014, http://www.kcci.com.pk/April%2017,%202014.htm. Accessed on November 16, 2014

As for Russia, the following crucial factors will assist in understanding its current rapprochement with Pakistan. Firstly, Pakistan is a crucial factor in trade routes/corridors, thus, making the country a prospective economic zone. In this direction, Pakistan may serve as an oil pipeline hub for Russia's growing energy markets and trade corridors which connect the South Asian countries and Central Asia, including a possible benefit to the Eurasian Economic Union (EEU).

Secondly, Central Asia is the strategic backyard of Russia which is susceptible to any external and internal security threat that would lead to a domino effect on its territory. Apart from the huge natural resources, trade and potential pipeline routes that Central Asia offers Moscow, Russian ethnics comprise the major ethnic groups in Central Asia. Russia's foreign policy priorities towards the former Soviet space are often justified as being for the protection of the Russian minorities.

Thirdly, the current developments in Afghanistan have certainly contributed in determining Russia's strategic calculus towards Islamabad. With the US drawdown from Afghanistan in 2014, the security situation has deteriorated, and Russia fears that this will lead to the reemergence of the Taliban and the rise of non-conventional threats such as drug trafficking from the region spilling over to Central Asia and the Caucasus. Apart from shoring up its security concerns in Central Asia, there is a growing realisation in Moscow that Pakistan holds the lever for bringing stability in the Af-Pak region. This is seen as one of the reasons for Russia supporting Pakistan's permanent membership in the SCO, and the sale of the Mi-35 Hind attack helicopters for counter- terrorism operations. Thus, developments in Afghanistan play a key role in determining Russia's strategic calculus towards Islamabad.

CURRENT PHASE IN RUSSIA-PAKISTAN RELATIONS: CONCERNS FOR INDIA

The growing political and diplomatic bonhomie, including defence cooperation between India and the US has been a major cause of concern for Moscow. India is currently the US' largest defence market. Russia's two largest defence consumer nations are India

and China: India, has diversified its defence markets, and China's growing indigenisation of its defence industry, has impacted the revenue flow to the Russian defence industrial complex. This has necessitated Moscow to find other defence customers to keep the finance flowing to support its defence industrial complex. On the other hand, Pakistan's urge to upgrade its defence equipment and need for reliable defence markets has resulted in defence cooperation between Russia and Pakistan in recent times.

Russia and Pakistan conducted their first ever joint military drills for counter-terrorism and drug trafficking called "Friendship 2016" from September 24-October 7, 2016 (as scheduled), despite the pressure of the political and security tensions in the Indian subcontinent post the Uri attacks.[9] Some scholars have argued that the strengthening of ties between Moscow and Islamabad has caused anxiety to India. In this scenario, the following questions arise: are India's concerns justified with regard to the Russia-Pakistan rapprochement? Will Pakistan gain parity with India in Moscow's foreign policy priorities? Has Russia calculated its 'risk' factors in strengthening relations with Pakistan? And is Russia's detente with Pakistan a 'signal', or a 'gamble' with its strategic partnership with India? It would be useful to try to find answers to these questions and understand the scope of the relations between Russia and Pakistan, and the implications for India-Russia relations.

During the Cold War period, Pakistan held strategic relevance in Asian geopolitics and played a key role in promoting Western interests in Asian geopolitics and in curbing the advancement of the Soviet Union, especially post the Afghanistan invasion. Simultaneously, Pakistan also fostered its own interests in gaining strategic depth in Afghanistan and making inroads into Central Asian geopolitics via Afghanistan. Post the Soviet collapse, the US emerged as the leader of the unipolar world and its preeminence remained unchallenged

9. On September 18, 2016, four terrorists suspected to be from the terror group Jaish-e-Mohammad carried out an attack on the 12th Brigade Headquarters in Uri near the Line of Control (LoC) that resulted in the killing of 17 Indian soldiers. This was second such incident to have taken place on Indian territory this year after the Pathankot attacks. Though all the terrorists were killed on both occasions, the security breach and the killing of defence personnel raised India's security concerns that are mainly emanating from the territory of Pakistan and its terror outfits.

for a long time. Many Asian countries, including India, began to tilt towards the US in the post Cold War era. Hence, Pakistan had partially lost its strategic relevance in Washington's foreign policy objectives in the 1990s but regained it post the US announcement of the "Global War on Terror". However, Pakistan's efforts to combat terrorism in its territory have also come under the US scanner after the killing of Al Qaeda leader Osama bin Laden in Abbottabad and its failure (rather unwillingness!) to crack down on the Haqqani network.

The rapprochement between Russia and Pakistan is seen as an outcome of new synergies in their strategic partnership: defence cooperation, US support for the Nuclear Suppliers Group (NSG) membership to India and the recent signing of the Logistics Exchange Memorandum of Agreement (LEMOA) and also to strengthen Russia's 'pivot to Asia strategy'.

Pakistan's geographical proximity connects South Asia through the South Asian Association for Regional Cooperation (SAARC), China, Afghanistan, and Central Asia [Eurasian Economic Union (EEU)], including potential economic corridors [One Belt, One Road, China-Pakistan Economic Corridor (OBOR, CPEC)] and energy supply routes.[10] This has elevated Pakistan's strategic relevance and has aroused the interest of external actors such as Russia which may benefit economically from such projects in the coming years.

But the prime factor for Russia's decision to collaborate with Pakistan is to bring stability in the Af-Pak region in order to preserve its interests in the CARs. Elaborating further, until the withdrawal of the US-led combat forces from Afghanistan, the coalition forces provided a 'security blanket' for the countries around Afghanistan, including the CARs, from the rise and threat of Taliban and Islamist fundamentalism. Post the US withdrawal from Afghanistan, the Taliban has managed to expand its influence and activities within Afghanistan, and Moscow is concerned about the spillover of religious fundamentalism in Central Asia.

The unvoiced indication of Russia developing ties with Pakistan is believed to send a strong signal to India in view of

10. Andrew Korybko, "Pakistan Is The "Zipper" Of Pan-Eurasian Integration", *Russian Institute of Strategic Studies*, September 9, 2015. http://en.riss.ru/analysis/18882/. Accessed on November 14, 2015.

the enhanced bilateral ties between New Delhi and Washington. India, however, always held/will hold more leverage than Pakistan in Russia's foreign policy priorities. Russia has always been vocal in condemning Pakistan's strategy of sponsoring terror outfits aimed at sabotaging India's national security. Moscow has repeatedly backed India's position on the Kashmir issue and had vetoed the United Nations Security Council Resolution in 1962 on the Kashmir issue. It also used its veto in favour of India during the 1971 Bangladesh Liberation War against Pakistan. Russia has also consistently supported India's permanent membership in the UN Security Council (UNSC). Such historical instances have not only strengthened the ties between India and Russia but also the confidence that India has a special place in Moscow's foreign policy priorities compared to Pakistan.

Though Russia had gone ahead with the military drills with Pakistan, its support for its traditional ally, India, is evident from a recent Russian statement issued post the Uri attacks:

> We strongly condemn the terrorist attack against an army base in Jammu and Kashmir's Uri in the early hours of September 18, which killed 17 and injured 30 service personnel.... We are also concerned about the fact that, according to New Delhi, the army base near Uri was attacked from Pakistani territory. We believe that this criminal act will be investigated properly, and that its organisers and perpetrators will be held accountable. We confirm our continued support for the Indian government's counterterrorism efforts.[11]

Russia also shifted the venue of the exercise from Rattu area of Gilgit-Baltisan which falls in Pakistan Occupied Kashmir (PoK) to Cherat.[12] Alongside the Russian and Pakistani troops conducting

11. "Comment by the Information and Press Department on the Terrorist Attack in the Indian State of Jammu and Kashmir", Ministry of Foreign Affairs of the Russian Federation, September 19, 2016, http://www.mid.ru/foreign_policy/news/-/asset_publisher/cKNonkJE02Bw/content/id/2449485?p_p_id=101_INSTANCE_cKNonkJE02Bw&_101_INSTANCE_cKNonkJE02Bw_languageId=en_GB
12. Dipanjan Roy Chaudhury, "Russia Cancels Joint Military Drill with Pakistan in PoK post Uri Attack; To Conduct Drill only at Cherat near Peshawar", *The Economic Times*, September 23, 2016, http://economictimes.indiatimes.com/news/defence/russia-cancels-joint-military-drill-will-pakistan-in-pok-post-uri-to-conduct-drill-only-at-cherat-near-peshawar/articleshow/54485444.cms

joint military drills, Russia simultaneously conducted the INDRA 2016— the Russian-Indian counter-terrorist exercise in Vladivostok from September 23 to October 3, 2016. In total, more than 500 servicemen of both sides, up to 50 pieces of armament and military hardware, including Infantry Fighting Vehicles (IFVs), Armoured Personnel Carriers (APCs), T-72 tanks, Grad Multiple Launch Rocket System (MLRS), cross-country automobiles, Unmanned Aerial Vehicles (UAVs), attack and army aviation of the Eastern MD, were involved in the joint exercise.[13] The drills with India are at a much larger scale than those with Pakistan. Additionally, Russia also conducted an eight-day naval drill with China from September 12-19, 2016, in the South China Sea, off the coast of China's Guangdong province. The Joint Sea-2016 exercises between the two countries involved surface ships, submarines, fixed-wing aircraft, helicopters, and amphibious vehicles.[14] Therefore, Russia has engaged the three major Asian actors in joint military drills at the individual level, fairly around the same time period, but the key deduction here is that it is carefully 'balancing' all three countries, including accommodating their interests, respectively. By bringing in Pakistan alongside India and China, Russia is set to vigorously engage in Asian geopolitics through its "Pivot to Asia" strategy.

CONCLUSION

Russia will continue its attempt to develop a cooperative relationship with Islamabad as the region holds strategic and economic significance. Pakistan's permanent membership in the SCO is seen by many scholars as a concession from the Russian side.

Moscow cannot possibly hope to displace Washington or China for that matter as Pakistan's key partner, but currently Moscow and Islamabad see their relationship as being of mutual benefit. However, Pakistan's strategic interests continue to be in conflict with Russian interests, especially in Central Asia. Aware of Pakistan's

13. "Indra-2016, Russian-Indian Counter-Terrorist Exercise, Started in Primorsky Krai", Ministry of Defence of the Russian Federation, September 23, 2016, http://eng.mil.ru/en/news_page/country/more.htm?id=12096915%40egNews
14. Ankit Panda, "Chinese, Russian Navies to Hold 8 Days of Naval Exercises in the South China Sea", *The Diplomat*, September 12, 2016, http://thediplomat.com/2016/09/chinese-russian-navies-to-hold-8-days-of-naval-exercises-in-the-south-china-sea/

past behaviour and its strategy of supporting terrorism, Russia would carefully monitor Islamabad's actions and influence in the region. Pakistan has been acknowledged as promoting religious fundamentalism and terrorist organisations. Despite all these factors, an encouraging aspect for India would be that knowing Russia's stance on the India-Pakistan crisis, the Kremlin's greater involvement in the management of Asian security may facilitate a favourable condition for India.

Arguably, suspicion and hostility in the relations continue since the Cold War period. In order to develop strong bilateral relations with Russia, Pakistan has to overcome the impediments that have impacted the bilateral engagement. In this direction, Islamabad may seek to refurbish its image of a nation which has been a hub of religious fundamentalism, terrorist organisations and insurgency if it is to work towards enhancing its partnership with Russia, especially in the aspect of Af-Pak regional security. As Afghanistan is a known terrain for Russia, it is crucial for Moscow to handle Pakistan's motives towards the region more rigorously and cautiously. It would also be interesting to see how far Pakistan succeeds in converting the Russian expectations into strategic payoffs.

There is a clear-cut paradigm shift in Moscow's foreign policy approach towards Islamabad that may result in serious repercussions for India-Russia bilateral ties in the future. But it is unlikely that Moscow would make any effort to shift from seeing India as its main partner in the South Asian region and also at the global level. While Moscow's move to sell weapons to Pakistan is perceived emotionally by India as an act of betrayal, it should actually not have come as a surprise since Russia has the prerogative to diversify its defence markets. In 2013, Russia finalised a deal with China for the sale of 48 Sukhoi Su-35 aircraft. India must, of course, persist in communicating its security concerns to Russia and invoke the special relationship that the two have historically enjoyed. The bilateral relationship is still stable, despite the hiccups in defence cooperation. Moreover, India continues to have leverage in its relations with Russia as it shares better camaraderie and mutual trust. But both India and Russia will have to work at sustaining the special and strategic relevance of the relationship.

In the case of Pakistan, Russia's engagement, including defence cooperation with it, will continue so long as Islamabad is able to fulfil Moscow's interests and secure its key policy objectives. All in all, Russia's policy towards Pakistan is based on, *"If you want to make peace with your enemy, you have to work with your enemy. Then he becomes your partner"*.[15] India will hold more leverage in Russia's policy interests than Pakistan, but the same cannot to be said in the case of China. Moreover, the real challenge for India is the China-Pakistan strategic alliance and not the Russia-Pakistan one alone, as the former is aimed at threatening the national interests and security of India. While these issues are a major concern to India, one should not get the impression that India will be a 'sitting duck' in the event of an external threat to its national security. New Delhi has reinforced its national security policy, stemming from its experience and strategic environment. Its diversification of defence markets, giving way to military modernisation, joint military drills and growing proximity with the US all comprise a case in point.

Some scholars have argued that India should be part of China's lucrative and ambitious projects such as the OBOR, CPEC and Gwadar, involving Pakistan as a key player. However, India becoming part of such unilateral initiatives by China involving Pakistan is far-fetched and wishful thinking, given the hostility and suspicion among these countries. India has its own contingency plan for economic prospects, including the Chabahar port, which is set to weave a network of roads and railways for trans-shipment of goods to the neighbouring countries. Chabahar is about 900 km from Gujarat's Mundra port. It is said that Iran's Chabahar project has given the much needed opportunity to India as it can reach Kabul and beyond Central Asia.[16]

As regards India-Russia relations, both countries have emerged as influential global players in the post Cold War era, based on their individual capacities. Mutual trust and understanding between

15. Interview with Maxim Shepovalenko, deputy director, Centre for Analysis of Strategies and Technologies, by the author during her PhD field trip to Moscow on June 5, 2016.
16. Sanjay Kapoor, "Chabahar, a Geo-Political Plus for India", *The Hindu Business Line*, November 28, 2016, http://www.thehindubusinessline.com/opinion/india-chabahar-port-and-politics/article9395192.ece. Accessed on December 5, 2016.

them continue despite the two countries pursuing a more diversified foreign policy. The bilateral engagement in the past has shown a positive outcome as the two countries have given unconditional support to each other in achieving their respective policy objectives and goals. But the same cannot be said in view of the current uncertainties in the partnership. Thus, the need of the hour is that both India and Russia review their foreign policy interests towards each other to rekindle the bilateral relations, similar to what they were like during the Soviet era.

THE US ELECTIONS: POSSIBLE CHANGES IN POLICY AND INDIA

STUTI BANERJEE

The election of President-elect Donald Trump has surprised not just Americans, but, it would be fair to say, the world at large. The election of the Republican Party candidate on the November 8, 2016, led to protests in some American cities, with people calling upon the Electoral College, whose vote will formally elect Trump as president, to vote for Hillary Clinton. Some even went to the extent of stating that the Electoral College system of electing the president of the United States should be discontinued in favour of popular voting. The protests come in the wake of reports that Mrs. Clinton won the popular vote but as she was unable to reach the majority in the Electoral College votes, she had to concede the election.

THE US PRESIDENTIAL ELECTIONS

Despite the popular perception, the election for president in the United States is not a direct election. Unlike in India, where the citizens directly vote for a candidate, and the party with the majority is called by the president to form the government, in the United States, the president is elected by the Electoral College, a system that

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was established in the US Constitution as a compromise between the election of the president by a vote in Congress and the election of the president by a popular vote of qualified citizens.[1] The candidates for the Electoral College are members of the party recognised for their service to the party and generally holding a leadership position in their party. They comprise senior party members and state party leaders. When the voters in each state vote for the presidential candidate of their choice, they are voting, in reality, to select their state's electors. The electors are expected, but not required, to vote for the candidates they represent. A candidate needs 270 of the 538 electors' votes. President Elect Trump has won close to 280 Electoral College votes.

The election results have also generated much debate on the direction that the United States is choosing for itself in both its domestic and foreign policies. The campaign for the presidency lasted close to 18 months from when the candidates first announced their candidature. The announcement followed the candidates campaigning to win the support of the party delegates from the various states. There are two main ways of holding a vote: a primary and a caucus. Most states hold a primary, which works like a regular election with voters casting their vote at a polling booth or by post. Caucuses are small party meetings held throughout a state where candidates' supporters speak on their behalf before a vote is held. The purpose of America's primary elections for political parties in each state (and American territory) was to determine their preferred candidate for the November presidential election. The primary and caucus elections are spread out over more than four months. Nonetheless, the campaign to win this first phase of the American elections starts as early as a year in advance, with the first candidate announcing her/his bid for the party's nomination.[2]

It is at the national conventions that the political parties announce their tickets—the president and vice president nominees who will now represent the party on the ballot in the November election. This

1. US National Archives and Records Administration, "The US Electoral College," https://www.archives.gov/federal-register/electoral-college/about.html. Accessed on November 18, 2016.
2. Stuti Banerjee, "The US Presidential Elections: Phase One," http://www.icwa.in/pdfs/IB/2014/TheUSPresidentialElectionsIB02052016.pdf. Accessed on November 18, 2016.

essentially starts the second phase of the elections with the candidate and his vice presidential 'running mate' now campaigning to win the support of the people. During this phase of campaigning, the discussion expands beyond the mostly domestic issues that were at the forefront of the primaries and caucuses, to include issues of foreign policy and national security. While the election is a domestic affair for the United States, nonetheless, given its power in the international arena, it is followed internationally. The foreign policy choices of the candidates indicate the possible direction the new Administration is likely to take forward.[3]

FOREIGN POLICY: INDICATIONS FROM THE CAMPAIGN

During his campaign, Trump expressed his views on the possible direction that he would like the United States to chart. On some of the issues, he has been criticised by policy-makers, legislators, and even within his own party.

On relations with the United States' southern neighbour, Mexico, he has pledged to build a wall to stop illegal immigration and toughen immigration laws. In 2014, more than 11.7 million Mexican immigrants resided in the United States, accounting for 28 percent of the 42.4 million foreign-born population—by far the largest immigrant origin group in the country.[4] Mexicans made up 52 percent of all unauthorised immigrants in 2014, though their numbers had been declining in recent years. There were 5.8 million unauthorised Mexican immigrants living in the US that year, down from 6.4 million in 2009, according to the Pew Research Centre estimates.[5]

On the Iran nuclear deal, Trump has been critical of President Obama and has repeatedly termed it the "worst deal ever". He has stated that "dismantling" the deal and renegotiating the terms of the deal would be his priority. Nonetheless, the international

3. Stuti Banerjee, "The US Presidential Elections: Phase Two Possible Foreign Policy Directions of the Candidates," http://www.icwa.in/pdfs/IB/2014/USPresidentialElectPh2IB11082016.pdf. Accessed on November 18, 2016.
4. Jie Zong and Jeanne Batalova, "Mexican Immigrants in the United States," http://www.migrationpolicy.org/article/mexican-immigrants-united-states. Accessed on November 21, 2016.
5. Jens Manuel Krogstad, Jeffrey S. Passel And D'vera Cohn, "5 Facts about Illegal Immigration in the U.S.," http://www.pewresearch.org/fact-tank/2016/11/03/5-facts-about-illegal-immigration-in-the-u-s/. Accessed on November 21, 2016.

community's commitment to the deal remains strong, with the parties that negotiated it and the other nations that benefit from it, such as India, continuing to support it. The deal has already gone into effect, with Iran resuming trade with a number of nations that had placed sanctions on it, in return for shipping out its stockpile of uranium and centrifuge machines. In such a situation, it would be detrimental for Trump to isolate the United States, especially at a time when the United States needs the support of Iran to resolve the crisis situation in the region.

Defeating the Islamic State of Iraq and Levant (ISIL) is a priority for Trump. He had stated numerous times during his campaign that the policy of the Obama Administration towards the ISIL is flawed and he has a plan to defeat them. However, he has not stated what those plans are and how he would go about implementing them. Policy-makers have pointed on that Iran would be a key state for the United States in its efforts to fight the ISIL and bring about stability in the region. Thus, it would be detrimental for the new Administration to undermine or renegotiate the deal with Iran without undermining the coalition that the United States has built to fight the terror organisation in Syria and Iraq. The appointment of Michael Flynn, a retired US Army lieutenant general as the National Security Adviser (NSA) has raised some questions on the future policy towards the region, especially Iran. Flynn has for years been supportive of the idea of the United States bombing Iran and/or pursuing regime change. As national security adviser, he would be advising the president on how the United States should respond to crises such as a possible confrontation over the South China Sea, or respond to a humanitarian crisis like the tsunami. Policy-makers have asked the new Administration to be cautious and not build a foreign policy based on rhetoric.

On the crisis in Syria, Trump has not been clear on his stand on President Assad, who has been accused by the United States of humanitarian crimes, including the use of chemical weapons on Syrian citizens. However, on Russia, which has been supportive of the Assad government, Trump has expressed his willingness to work with President Putin to defeat the ISIL, bring about stability in Syria, and also the larger Middle East.

Trump has been critical of China right from his opening speech as a candidate, describing it as one of the United States' top adversaries, particularly, when it comes to economic policy. He has accused China of being a currency manipulator. He has pledged to take steps towards stopping hacking of United States' websites, especially, government websites from Chinese entities, and threatened the Chinese government with steep tariffs if it doesn't agree to rewrite trade agreements. He has also stated that he would expand the US' military presence in the South China Sea as a deterrent to China's territorial claims to artificial islands there. He said he would toughen rules against the theft of intellectual property and combat the subsidies that China offers to boost exports.[6] At the Republican Party National Convention (RNC), Trump pledged to never sign any trade agreement that hurts American workers, or that diminishes the freedom and independence of the United States. Instead, he stated that he would make individual deals with individual countries. In other statements, he has been critical of the World Trade Organisation (WTO) and stated he would reconsider the United States' membership in the organisation. He also wants to renegotiate trade agreements with China, Japan, South Korea and other nations as he feels the current agreements are disadvantageous to the United States, and he would leave the North American Free Trade Agreement (NAFTA) on similar grounds.[7]

Trump's comments on the North Atlantic Treaty Organisation (NATO) and nuclear non-proliferation have caused concerns among international leaders. During the RNC, in an interview to the *New York Times* newspaper, Trump raised questions on the commitment of the allies to NATO and stated that he would have a relook at the alliance to ensure that the United States is not left with the burden of defending its allies. He has also questioned if the other alliance members are paying their part of the NATO's budget commitments. He further commented that if the allies have fulfilled their obligations to the United States, then the United States would fulfil its obligations to them. Other countries' need for assistance would have to be

6. Donald Trump, "US China Trade Reforms," https://www.donaldjtrump.com/positions/us-china-trade-reform. Accessed on November 19, 2016.
7. Banerjee, n.3.

considered but would not be automatic. He reiterated his view that NATO, the security alliance formed as a bulwark against the Soviet Union, was "obsolete."

On nuclear non-proliferation, Trump faced criticism for his comments that other countries were free to develop nuclear weapons. He later clarified that he is supportive of nuclear non-proliferation but would not like to be in a position to use nuclear weapons. On the other hand, he expressed his inability to comment on his stance or support for a 'No First Use' policy for the United States. He ruled out a "first strike," but then revealed not just a willingness to use nukes but also a misunderstanding of the high-stakes balancing act the nuclear superpowers have pursued for decades, leading to comments from analysts that he did not realise the difference between 'first use' and 'first strike'. He also refused to comment on whether the United States, under his presidency, would reduce its nuclear arsenal. He has, however, stated that the triad would continue to be important. During his campaign, he had stated that he would not hesitate to use nuclear weapons if the United States were attacked. He had also stated that he would put pressure on China to check the nuclear weapons development of North Korea. The United States, under both Democratic and Republican Administrations, has worked closely with partners in China and Russia to halt the advance of North Korea's illegal capability.

THE NEW US ADMINISTRATION AND INDIA

The question that is now being asked is: will the new Administration and India be able to further strengthen the existing relationship between the two nations? It is no secret that Prime Minister Narendra Modi and President Obama have been able to build a personal rapport. President Obama accepted the invitation to be the chief guest at the Republic Day Parade in India in 2015. It has also translated into concrete policy decisions, with the United States supportive of India's inclusion in the international export control regimes such as the Nuclear Suppliers Group (NSG), Missile Technology Control Regime (MTCR), Australia Group and Wassenaar Agreement. India and the United States have also renewed their ten-year defence partnership agreement, apart from progressing on the civil nuclear agreement.

At a time when the two nations are looking to expanding trade relations from $100 billon to $500 billion, approximately, and conducting the largest number of military exercises with each other, there is a lot of uncertainty on how the future relationship will unfold with the new US Administration.

Trump has held no political office before his election as president of the United States, thus, it is not possible to look back at his record of decisions to predict a possible future course of relations with India. During his campaign, Trump had mimicked an Indian call centre employee, and talked against outsourcing. On the other hand, he praised India for its development and talked about his willingness to work with Prime Minister Modi.

However, given Trump's stance on extremism, India can leverage and work with the US on defining and countering terrorism. India has for long been demanding that the international community needs to come to a universal definition on terrorism. The demand was reiterated by Prime Minister Modi in his address to the United Nations General Assembly (September 2015). Trump, in his campaign speeches, has talked about his intended tough stand on terrorism. Nonetheless, India has to be cautious as Trump had stated that he would be willing to allow the use of torture techniques such as water boarding, etc on terrorists to gather information.

Trump has also called Pakistan the most dangerous country and has stated that the United States needs to increasingly engage with India to stop Pakistan. India welcomes engagement with the United States to promote peace and stability in the region, nonetheless, certain issues would be resolved within the ambit of bilateral relations, as has been agreed by the two countries. On the issue of Pakistan supported terrorism, India has provided proof of terrorists using Pakistani territory to plan and launch terrorist attacks on India, and also the compliance of some in the Pakistani establishment. New Delhi welcomes the international community's support to bring the perpetrators of these acts to justice.

In his campaign speeches as well as his phone conversations with Russian President Putin, Trump has stated that he would work towards building relations with Russia. This would be a welcome step for India as it shares historic relations with the latter. The

rebuilding of relations between Russia and the US would help build peace and stability in the Middle East region which is of interest to India. India not only has energy interests in the region but also has a large migrant population there. The region also has an effect on the stability of Afghanistan, which is of importance to India.

Some areas of concerns for India can be highlighted as the following:

On India, Trump has given mixed indications. On the one hand, he has praised Prime Minister Modi and stated that the Indian students who come to the United States are hard working and the United States needs more people like them. On the other hand, he has stated that he would impose heavy taxes on companies that manufacture in foreign nations. For example, he has stated that he would impose a 35 percent duty on car manufactures for cars made abroad. This would be a blow to India's 'Make In India' initiative that wants to attract foreign companies to manufacture in India.

The other issue that is of concern for India is the tough stand that Trump has taken on the issue of immigration. His calls for a ban on Muslims from coming to the United States and the deportation of Mexican migrants, the treatment of minority communities, etc have caused fear among the migrant communities. His statements regarding limiting the number of H1B visas granted, along with proposals to review the immigration policy, are of particular concern to India. Indian professionals are the largest users of the H1B visa. It is used by Indian and American IT companies.

During his campaign speeches, Trump has called for building a strong military presence in the South China Sea to counter the Chinese expansion plans. He has also called China a currency manipulator and stated that he would renegotiate trade deals with China. The manufacturing sector is a large part of the Chinese economy, and Trump's campaign has been all about bringing these jobs back to America. The relook on trade policies would be a setback for India, especially at a time when the two nations are aiming to achieve $500 billion two-way trade in a few years. And while India would not be affected if the United States withdraws from the Trans-Pacific Partnership, the negatives of Trump on the World Trade Organisation would affect India, which is a part of it.

India needs to be mindful of the relationship that the United States under the current Administration builds with its neighbours: Pakistan and China and Iran. India has historical and civilisation linkages with Iran and post the Iran nuclear deal, it has strengthened its engagement with the country. Iran is important for India as an energy supplier and also as an important factor in Afghanistan.

Apart from the above, concerns for India remain on Trump's views on NATO, nuclear non-proliferation, climate change and the fact that he has not really underlined a policy for South Asia with respect to the United States' future presence in Afghanistan. With the campaign focussed on *Make America Great Again,* it would seem building America rather than its engagements abroad will be the priority.

CONCLUSION

Donald Trump's foreign policy is likely to depend on how the international leaders respond to his presidency and how he, in turn, engages with both allies and other nations. His lack of political experience may become his biggest advantage as he comes with no prior expectations. He may be able to not only strengthen relations with existing allies but also overcome differences with others.

Perhaps aware of his strengths and the mood of the electorate, his campaign stressed largely on domestic policy matters and on issues of foreign policy that had domestic implications such as trade with China, a border fence with Mexico, etc. If this is the case, it allows India and also China, along with the BRICS (Brazil, Russia, India, China and South Africa) nations to expand their global footprint. It would also mean that the South Asian nations may come closer to resolving issues knowing that the United States is ceding space in the region.

Trump's campaign was premised on the idea that his approach would *Make America Great Again*. His presidency will test that proposition. But many analysts argue that by putting America's interests first so blatantly, he may push many US allies in Europe and Asia to make their own deals with a newly assertive Russia and

a rising China.[8] The major challenges that his presidency would face are the situation in the Middle East, especially as the coalition forces are in combat with the ISIL in key positions in Iraq; the Syrian crisis would be another quagmire from the region that he would inherit. Terrorism, not limited to the Middle East, but in Europe, is likely to affect the United States. China would remain his biggest challenge, given the statements he has made during his campaign to bring back manufacturing jobs from China to America.

It remains to be seen if the campaign rhetoric would be taken forward and become the White House policy. As has been pointed out, Trump has no political background, thus, it is not possible to speculate on his reactions to crisis situations that the United States would face in the future. Nor has he as yet given any indication of the direction the new Administration would take with existing conflicts. The president-elect's campaign trail pronouncements on international affairs were sometimes contradictory, often vague, and seldom substantive. One has to wait for the new Administration to take charge, and provide the new president the time to build his leadership and equation with other world leaders.

8. David Ignatius, "What President Trump's Foreign Policy Will Look Like," https://www.washingtonpost.com/opinions/global-opinions/what-president-trumps-foreign-policy-will-look-like/2016/11/09/3ab88670-a632-11e6-ba59-a7d93165c6d4_story.html?utm_term=.58a43c65969e. Accessed on November 21, 2016.

PAKISTAN'S BALLISTIC AND CRUISE MISSILE PROGRAMMES

RAVINDER SINGH CHHATWAL

Pakistan is China's Israel

— Gen Xiong Guangkai,
PLA Intelligence Chief, 1992

In the early 1960s, Pakistan successfully launched its first sounding rocket from the Sonmiani Rocket Range in Baluchistan.[1] Since then, Pakistan has developed a number of ballistic missiles with technical assistance from China and North Korea. Pakistan's interest in ballistic missiles stems from its intense enmity with India and requirement of a delivery vehicle for its nuclear weapons. Although Pakistan started its missile programme in the 1960s, it really picked up speed in the 1990s, integrated with its nuclear weapons development programme. Pakistan has a small missile force but is increasing its inventory every year. The land-based missile force is under the Army Strategic Forces Command (ASFC). This paper attempts to discuss Pakistan's ballistic and cruise missile programme. An attempt has also been made to analyse the implications for India.

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1. "Pakistan Space and Upper Atmosphere Research Commission (SUPARCO)," http://suparco.gov.pk/pages/history.asp. Accessed on October 16, 2015.

BACKGROUND

Pakistan started to develop knowledge on rockets in September 1961 when the Pakistan Atomic Energy Commission (PAEC) set up the Space Sciences Research Wing and, in the same month, sent some of its engineers and scientists to NASA (National Aeronautics and Space Administration) in the USA for rocket launch training. On June 7, 1962, Pakistan successfully launched its first two-stage rocket, the Rehbar-1, from the Sonmiani Rocket Range. This was followed by another successful launch, two days later, of the Rehbar-2, and, thus, set in motion Pakistan's sounding rocket programme which provided the expertise for its future missile programmes.

In 1964, the Space Sciences Research Wing of the Pakistan Atomic Energy Commission (PEAC) was delinked from PAEC and a new, independent organisation named the Space and Upper Atmosphere Research Commission (SUPARCO) was formed directly under the control of Pakistan's president. Later, in 1967, SUPARCO was brought under the control of the Scientific and Technical Research Division (S&TR) of the Pakistan government. Air Cmde WJM Turowicz was selected as the first executive director of SUPARCO. He was a Polish national who had served in the Royal Air Force in India in World War II and, after the war, settled down in Pakistan.

In 1981, President Zia-ul-Haq gave a fresh impetus to the missile programme by granting autonomous status to SUPARCO. India's launch of the Prithvi surface-to-surface ballistic missile in 1988 spurred Pakistan to launch its own ballistic missiles, and in 1989, the Hatf-1 and Hatf-2, solid propellant, short range ballistic missiles were launched. Both these missiles benefited from the knowledge gained in launching sounding rockets in the 1960s for which NASA, assisted Pakistan. According to S. Chandrashekar of the Indian Space Research Organisation (ISRO), the Hatf-1 and Hatf -2 are based on French sounding rocket technology as they have technical specifications similar to the French Dauphin rocket.[2]

2. Wisconsin Project on Nuclear Arms Control,"Pakistan Derives its First 'Hatf' Missiles from Foreign Space Rockets", *The Risk Report*, vol 1, no 8, October 1995, p. 4, http://www.wisconsinproject.org/countries/pakistan/hatf.html. Accessed on October 16, 2015.

DEVELOPMENT OF PAKISTAN'S MISSILE CAPABILITIES

The development of Pakistan's missile capabilities can be serialised as follows:

- The initial Hatf-1and Hatf-2 programmes.
- The Ghaznavi and Shaheen solid fuel programme with Chinese assistance at PAEC, under Dr Samar Mubarakmand.
- The Ghauri liquid fuel programme, with North Korean assistance, at the Khan Research Laboratories, under Dr AQ Khan.
- The cruise missile programme.

An improved version of the Hatf-1, labelled the Hatf-1A, was launched in 1992. Both the Hatf-1 and Hatf-1A, are believed to be unguided rockets, with the Hatf-1 having a range of about 70 km and Hatf-1A having a range of 100 km.[3] A new version, the Hatf-1B, with inertial guidance, was tried in 2000 with a new warhead and a range of 100 km. The Hatf-1B has a more modern TEL (Transporter Erector Launcher). The Hatf-1 entered service in 1992 and the Hatf-1A in 1995. The Hatf-1B seems to have entered service in 2004, perhaps with improved and upgraded equipment installed on existing missiles.[4] The Hatf-1, with a payload of 500 kg, is capable of carrying a nuclear warhead with a yield of 1 to 5 kT but according to *Jane's Weapons Strategic*, "It is assumed that only HE (High Explosive) or chemical warheads were developed for these short range missiles."[5]

The Hatf-2 was developed as a solid propellant, road mobile, short range ballistic missile. Design work for this was started in 1987 and the initial version used the Hatf-1 in the second stage which had a range of 300 km and a 500 kg payload. Work on the initial version was stopped in 1994, probably due to inaccuracy and unsatisfactory performance. By 1987, Pakistan had developed its nuclear bomb with Chinese help[6] but the only delivery system it had was the F-16 fighter and the Chinese A-5 attack aircraft. Pakistan's indigenous missile

3. Jim O'Halloron, *IHS Jane's Weapons Strategic: 2013-2014*.
4. Ibid.
5. Ibid.
6. "Pakistan Nuclear Weapons: A Brief History of Pakistan's Nuclear Program", Federation of American Scientists, http://fas.org/nuke/guide/pakistan/nuke/. Accessed on October 16, 2015.

programmes had severe limitations in terms of accuracy and range. At this time, the Chinese again came to Pakistan's assistance and offered their M-11 which Pakistan purchased in 1992.

The purchase of 34 M-11s (export version of the DF-11 missile) from China slowed down the work on the Hatf-2. In 1997, the Pakistan National Development Complex (NDC) redesigned the Hatf-2 with a reduced range of 180-200 km and this was named Hatf-2 (Abdali). This missile was first tested in 2002 and has a payload which can vary from 250 kg to 450 kg. The missile is capable of having a nuclear warhead of about 5kT(kilo tonne) yield but it is not clear whether a nuclear warhead was developed for this missile or only conventional HE (High Explosive) or sub-munitions warheads were developed. The guidance system is probably based on inertial navigation with an accuracy of about 150 m Circular Error Probable (CEP). To improve the accuracy, the missile may be upgraded with the Global Positioning System (GPS) and terminal guidance which will improve its accuracy to about 30 m. The Abdali is operational with Pakistan Army units and perhaps entered service in 2005.[7]

PAKISTAN'S MISSILE FORCE

Missile Basics

Ballistic missiles are rocket engine vehicles that deliver nuclear or conventional weapons. A ballistic missile follows a ballistic trajectory over its flight path to deliver a payload on a target. Ballistic missiles can be armed with conventional high explosives, nuclear explosives, chemical or biological warheads. They can be launched from land, ships, aircraft or submarines. Ballistic missiles are categorised according to their ranges. The most common categorisation given by the Americans is as follows:[8]

- Intercontinental Ballistic Missile (ICBM) – over 5,500 km.
- Intermediate-Range Ballistic Missile (IRBM) – 3,000 to 5,500 km.
- Medium-Range Ballistic Missile (MRBM) – 1,000 to 3,000 km.
- Short-Range Ballistic Missile (SRBM) - up to 1,000 km.

7. O' Halloran, n. 3.
8. "Ballistic Missile Basics" *Federation of American Scientists*, http://fas.org/nuke/intro/missile/basics.htm. Accessed on October 24, 2016.

A cruise missile, on the other hand, is an air breathing unmanned aerial vehicle which uses aerodynamic lift to stay airborne and reach its target. Its primary aim is to deliver a bomb load or special payload to the target. Subsonic cruise missiles fly at a low level which makes them difficult to detect. Supersonic long range cruise missiles have to fly at high altitudes to conserve fuel but they also get down to low level in the terminal phase or do a steep dive on the target in the final phase. This makes them even more difficult to detect due to their high supersonic speed and low level/high speed dive in the terminal phase.

Cruise missiles can be classified according to their speed, range, warhead, propulsion system, launch platform and guidance system.

Ballistic Missiles

Pakistan's ballistic missile force basically consists of short range ballistic missiles and medium range ballistic missiles. Plans for deployment of missiles above 3,000 km range are still in the development stage.

Pakistan uses duplicate names for its missiles for reasons best known to it but perhaps the intention is to maintain secrecy and confuse the readers on its missile programmes and project them as indigenous developments. In the initial years, the missiles were simply numbered under the Hatf series. The name Hatf was given by the Pakistan Army as it was the name of the lance of Prophet Mohammad. In later years, the Ghaznavi, Ghauri and Shaheen missiles were also numbered under the Hatf series. Pakistan's missile force now comprises a number of types of missiles which include three SRBMs: the 320 km range Ghaznavi (Hatf-3) and Shaheen series (Shaheen-1/Hatf-4 900 km range; Shaheen-2/Hatf-6 2500 km range) solid fuel missiles; and 1,200 km range Ghauri-1/Hatf-5 liquid fuel missile.[9] The Shaheen-1 is based on the Chinese DF-11 missile and the Ghauri-1 is based on technology from the North Korean No Dong missile.

Pakistan's most prominent ballistic missiles are the Ghauri-2 and Shaheen-2 MRBMs. The Shaheen-2 (Hatf-6) is a two-stage solid propellant road mobile missile and has a payload of 1,000 kg. The Ghauri-2 is an improved version of the Ghauri-1 and is based on the

9. "Pakistan Ballistic Missiles", *Nuclear Threat Initiative*, http://www.nti.org/country-profiles/pakistan/delivery-systems/. Accessed on October 16, 2015.

North Korean No Dong missile. The Ghauri-2 has a range of 1,500-1,800 km and is capable of carrying a payload of 1,200 kg. In March 2015, Pakistan tested the Shaheen-3 missile which is an improved version of the Shaheen-2 and has an increased range of 2,700 km.[10] The Shaheen-3 is capable of covering all of India even if it is launched from the western parts of Pakistan.

The Army's tactical SRBMs include the initially developed Hatf-1 with a 70 km range; the Hatf-2 (Abdali) with 180 km range. In November 2013, Pakistan tested its 60 km range tactical missile, the Nasr (Hatf-9).[11] The Nasr is launched from a multi-barrel launcher capable of firing four missiles before reloading and has been touted by Pakistan as a Tactical Nuclear Weapon (TNW) for use against Indian Army armoured formations. The Nasr is a quick reaction shoot and scoot missile which can quickly relocate to fire again. The development of the Nasr has created serious nuclear proliferation issues because the use of battlefield nuclear weapons can easily escalate into a full scale nuclear war. India's nuclear doctrine clearly states that the use of nuclear weapons against it will invite massive nuclear retaliation.

Cruise Missiles

The two main cruise missile programmes currently in progress in Pakistan are the Babur (Hatf-7) and Raad (Hatf-8). The Babur is a subsonic mobile Land Attack Cruise Missile (LACM) which was first tested in 2005 and since then has been inducted in the army. The Babur missile is nuclear capable, has a range of 700 km, and is a copy of the American Tomahawk cruise missile.[12] It has a turbofan engine, the WS-500, which has been supplied by China.[13] The Raad is an Air Launched Cruise Missile (ALCM) armed with a conventional

10. Tim Craig, "Pakistan Tests Missile That Could Carry Nuclear Warhead to Every Part of India," *Washington Post*, March 9, 2015, https://www.washingtonpost.com/world/asia_pacific/pakistan-tests-missile-that-could-carry-nuclear-warhead-to-every-part-of-india/2015/03/09/920f4f42-c65c-11e4-bea5-b893e7ac3fb3_story.html. Accessed on October 26, 2015.
11. O' Halloran, n. 3.
12. Prahlad, "Why India Needs Nirbhay? Pak has Tomahawk Clones", March 13, 2013, http://news.oneindia.in/2013/03/13/why-india-needs-nirbhay-pak-has-tomahawk-clones-1170505.html. Accessed on March 10, 2014.
13. Pravin Sawhney, "Being Ready for any Eventuality", *The Pioneer*, http://www.dailypioneer.com/columnists/oped/being-ready-for-any-eventuality.html , June 6, 2013. Accessed on March 10, 2014.

warhead and has a range of 350 km.[14] In addition to these two missiles, Pakistan is also developing a ship launched land attack missile which was first tested in December 2012.

CHINESE INVOLVEMENT IN PAKISTAN'S MISSILE PROGRAMMES

Chinese involvement in Pakistan's missile programmes has been with the primary aim of containing India. After the 1965 India-Pakistan War, the Chinese realised that Pakistan cannot take on India on its own and this perception was accentuated after the 1971 India-Pakistan War when East Pakistan was formed as an independent nation, Bangladesh. It was after the 1971 War that China extended assistance to Pakistan and decided to give it nuclear and missile technology so that it could deter India. By 1987, Pakistan's nuclear bomb was ready with Chinese help. The Chinese provided Pakistan the atom bomb trigger and detonator technology but the missile platform for nuclear bomb delivery was not yet ready, so it was decided to use the Chinese A-5 fighter ground attack aircraft as a delivery platform. The Chinese had modified some of their A-5s for nuclear weapon delivery. Each modified A-5 could carry one gravity atom bomb in its internal bay. China had carried out trials on the A-5 with its nuclear bomb. In 1983, the Pakistan Air Force (PAF) was supplied with 53 A-5s (about two to three squadrons). It is suspected that some of these were modified for mating with the nuclear bombs.[15] But the A-5's shortcoming was its limited radius of action and vulnerability to enemy air defences. Ballistic missiles have greater range and are also inherently difficult to intercept due to their very high speed and low radar cross-section for detection. Thus, in the late 1980s, China offered to sell the M-11 (export version of the Chinese DF-11 SRBMs) missiles, which had a range of about 300 km, and a contract was signed in 1988.[16] In April

14. "Pakistan Ballistic Missiles", April 2016, http://www.nti.org/country-profiles/pakistan/delivery-systems/. Accessed on October 16, 2015.
15. As per this article, some of the A-5s with Pakistan were capable of carrying one 5-10kT nuclear bomb. "Fantan A-5, Q-5 (Nanchang)", http://fas.org/nuke/guide/pakistan/aircraft/a-5.html. Accessed on October 16, 2015.
16. "China's Missile Exports and Assistance to Pakistan," James Martin Centre for Non-proliferation Studies, Middlebury Institute of International Studies at Monterey, 2000, http://cns.miis.edu/archive/country_india/china/mpakpos.htm. Accessed on October 16, 2015.

1991, the USA told the Chinese that they had discovered that M-11 missiles were being transported to Pakistan but the Chinese denied it. In May 1991, the Americans imposed sanctions on the Chinese. In November, China and the USA reached an agreement in which China verbally agreed to follow the Missile Technology Control Regime (MTCR) guidelines if the USA removed the sanctions but the Americans insisted on a written assurance from the Chinese that they would follow the MTCR rules, which the Chinese did in February 1992, and the sanctions were removed in March 1992.

However, despite their pledge not to indulge in missile sales and to follow MTCR rules, the Chinese withdrew from the talks with the P-5 countries on conventional arms sales. The Chinese cited the US sale of 150 F-16s to Taiwan in September 1992 as the reason for their displeasure. In December 1992, it came to light that China had sold 34 M-11 missiles to Pakistan in violation of its commitment. It was also reported that the Chinese had sold a complete M-11 plant to Pakistan which was built on a turnkey basis at Tarwanah on the outskirts of Rawalpindi. Both China and Pakistan denied that the sale had taken place but the Americans were not convinced and, in 1993, again imposed MTCR sanctions on China which were lifted in 1994 after China agreed to stop the sale of the M-11 missiles and other missiles with more than 300 km range. In the 1990s, the Americans had made persistent efforts to stop China from selling missiles to Pakistan and although they did achieve some success, the Chinese again backtracked on their 1994 pledge, and as per US intelligence reports, again started to provide missile technology to Pakistan.[17] It is also suspected that Pakistan's Shaheen-1 and Shaheen-2 missiles are based on China's DF (Dongfeng, meaning East Wind) series of ballistic missiles. Chinese assistance is critical for Pakistan's missile programme because Pakistan does not have the technical capabilities to execute such projects on its own. American intelligence reports have also stated that China has provided Pakistan with specialty steel, guidance systems and technical expertise to develop long range missiles. Another US intelligence report of February 1999

17. Philip Saunders et al., "How and Why China Proliferates Missiles to Pakistan," *Rediff*, http://www.rediff.com/news/2000/aug/22spec.htm. Accessed on October 16, 2015.

had said that China and North Korea had provided assistance for Pakistan's ballistic missile programme.[18] China has used North Korea for transferring Chinese missile technology to Pakistan.

CHINA'S REASONS FOR TRANSFERRING MISSILE TECHNOLOGY TO PAKISTAN

The Chinese are realists and believe their national interests are paramount. According to Philip Saunders, that is why China's proliferation and non-proliferation policies are determined by strategic and commercial interests.[19]

Pakistan and China are both adversaries of India and this common enemy binds them together in their much touted "all weather friendship." China feels that providing Pakistan with nuclear and missile technology will deflect India's attention towards Pakistan and prevent India from concentrating on China.

China also wants to promote export of arms and missiles for the lucre. Chinese military industries make handsome profits from sale of arms to countries like Pakistan, Iran, and other Third World countries that want cheap arms without political strings. In the 1980s, China earned about $ 3 billion from the sale of ballistic missiles to Saudi Arabia. Similarly, the sale of missiles to Pakistan provides Chinese defence companies financial gains.

IMPLICATIONS FOR INDIA

Pakistan's missile developments have all along been focussed against India, whereas India has to take into account the threat from two fronts – Pakistan and China. Apparently, the Pakistani thinking is that by building its nuclear and missile force, it can counter-balance India's conventional arms superiority. In a short period since the 1990s, Pakistan has been able to outpace India's missile developments by acquiring missiles and missile technology from China and from China's proxy—North Korea. Without Chinese assistance, Pakistan would not have been able to build up its missile force at such a fast pace. China has always defied US diplomatic efforts to prevent proliferation of missile technology to Pakistan.

18. Ibid.
19. Ibid.

Pakistan at present has a small missile force of about 60 missile launchers.[20] Reports indicate that Pakistan is increasing its inventory of nuclear warheads at a furious pace and has the capacity to produce about 20 nuclear warheads annually.[21] It has about 130 nuclear warheads against India's 120.[22] In the coming years, Pakistan will have to produce more missiles as delivery platforms for its nuclear weapons.

The most significant events from Pakistan are the development of the Nasr TNW with a range of 60 km and its plans to develop second strike capability by deploying nuclear weapons at sea. TNWs and sea-based nuclear weapons require miniaturisation of warheads which can be done only with plutonium warheads. It is not clear whether Pakistan has the capability to miniaturise the warheads but it can be reasonably assumed that China must have come to its aid.

Pakistan has recently made public statements that the Nasr TNW will be deployed against India. Pakistan's nuclear doctrine believes in first use of nuclear weapons unlike India's doctrine which states "no first use." India's doctrine believes in massive retaliation in case of a nuclear attack. Pakistan's contention that the Nasr will be used as a tactical weapon to halt the Indian advance into Pakistani territory is specious, since a nuclear weapon is not a tactical weapon, whatever be its a range. The strategic decision to use it will have to be taken at the highest political level.

To counter the Pakistani missile threat, India plans to buy Russian long range Surface-to-Air Missiles (SAMs) S-400. The S-400 has Anti-Ballistic Missile (ABM) capability. It can engage ballistic missiles in the terminal phase, up to a distance of 60 km, and travelling at speeds of approximately 5,000 m/s (14.7 mach).[23] The normal terminal speed of a ballistic missile is about 5,000 m/s.

The only possible way to control Pakistan's nuclear and missile programmes seems to be for India to build up its own forces and

20. "*Military Balance 2016*", February 9, 2016, https://www.iiss.org/en/publications/military%20balance/issues/the-military-balance-2016-d6c9. Accessed on November 8, 2016.
21. "Pakistan's Nuclear Stockpile Could Become World's Third Largest," *Dawn*, August 27, 2015, http://www.dawn.com/news/1203181. Accessed on November 8, 2016.
22. Saunders, et al., n.19.
23. *Jane's Land Based Air Defence Systems* 2013-2014.

make it economically unaffordable for Pakistan and its benefactors. For example, the anti-ballistic missile capabilities of the S-400 will provide India a Ballistic Missile Defence (BMD) shield to counter Pakistan's first strike from ballistic missiles. To counter this, Pakistan will have to invest in developing more advanced technology missiles with Multiple Independently Targetable Reentry Vehicle (MIRV) and Manoeuvrable Reentry Vehicle (MaRV) capability. For Pakistan to get into a slippery arms race can be economically ruinous, as happened in the Cold War with the collapse of the Soviet Union.

The strategic nexus between China and Pakistan will continue to provide Pakistan access to Chinese missile technology. There are no indicators that the Chinese are going to stop Pakistan's military build up against India. This nexus between China and Pakistan is likely to continue in the coming years. To counter the collusion between Pakistan and China against it, India will have to suitably build up its military capabilities and choose its diplomatic partners to counter the challenge from the Pakistan-China "axis."

NEW CHINESE BOMBER: ENHANCING LONG RANGE STRIKE CAPABILITY

ARJUN SUBRAMANIAN P

China has attained rapid progress in certain areas of its aviation sector. There has been considerable advancement in airframe development, stealth, air-to-air, air-to-ground missiles and munitions, etc. However, it is still lagging behind in aero-engine development and a few other technology areas. In addition, for some reason, for a long time, it has stuck to the vintage H-6 airframe for its bomber and mid-air refuelling fleet requirements. Though, probably in a decade's time, China will be modifying the Y-20 transport aircraft to serve as a mid-air refuel tanker to replace the limited capacity H-6U. For the advanced bomber fleet requirements, China has only recently embarked on a project to indigenously develop a bomber with advanced capability. The new aircraft is expected to commence flight by 2025, according to Chinese aviation experts. The aircraft can be expected to be based on a foreign aircraft model, either Russian or US, or a blend of technologies from both countries.

The official confirmation by the People's Liberation Army Air Force (PLAAF) Chief Ma Xiaotian that China is indeed developing

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a new long range bomber aircraft confirms the years long rumour.[1] However, no further details or specifics were given out about the kind of platform in the making. The H-6 airframe has been in use for several decades though with a lot of improvements and modifications. The actual engines have been replaced with a more advanced power plant and the airframe itself has seen several modifications to suit modern requirements. The avionics and flight control systems are far more sophisticated, making it a completely new aircraft. The same airframe has been modified into a cruise missile carrier as well as a mid-air refuel tanker. At present, China fields around 120 H-6 bomber aircraft powered by the twin Russian D-30KP-2 power plant.[2] The new bomber, when fielded, will improve the long range strike capability of the PLAAF. At present, due to lack of specifics, there are several questions that remain unanswered, and left to speculation.

> We are now developing a new generation of long-range bomber, and you'll see it in the future.
>
> – Ma Xiaotian, Chief PLAAF

However, what is clear is that Chinese military planners are placing heavy emphasis on a long range bomber force. This is also evident from the fact that, in the past decade, China has quietly increased the number of H-6 bombers and frequently employed the H-6K in long range patrols in the South China Sea and East China Sea as a show of force. Recently, a huge contingent of bombers with support aircraft undertook a mission beyond Japan, crossing the First Island Chain. This exercise was the biggest show of force ever since China established the Air Defence Identification Zone (ADIZ). However, this is not the first time that the PLAAF has flown such missions beyond the First Island Chain—it has

1. "China's New Long Range Bomber will Have Three New Features Including Scapability", *China.com* , October 8, 2016, http://3g.china.com/act/military/11132797/20161009/23721370.html. Accessed on November 2, 2016.
2. Gareth Jennings, "China Developing New Strategic Bomber", *IHS Jane's Defence Weekly*, September 6,2016, http://www.janes.com/article/63448/china-developing-new-strategic-bomber, Accessed on October 30, 2016.

been doing this since early 2015.[3] The significance of this mission was the huge number of aircraft deployed, which was exactly 40, including eight H-6K, fighters, mid-air refuel tankers, Electronic Intelligence (ELINT) and Airborne Warning and Control System (AWACS) aircraft.[4] The mission did not undertake any provocative action against Japan as it did not violate the Japanese air space. The PLAAF stated that it was a "routine drill on the high seas".[5] At present, the number of PLAAF bombers in service has exceeded the Russian fleet.[6] Yet, the quality of the Russian fleet far exceeds that of the Chinese. The confirmation by China on building a new bomber indicates its intent to enhance the qualitative edge of its future bomber force.

Bombers are believed to be an outdated concept in the present era, as, except the United States and Russia, no other country maintains a huge bomber force. Modern-day air defence systems are very advanced and sophisticated, and a huge, slow and lumbering aircraft like a bomber would be a sitting duck. Now, if China intends to field a long range bomber aircraft in the future, what sort of bomber will it be? How does it enhance the PLAAF's capability of meeting the current military challenges?

Going by the current technology and arsenals the world over, long range strategic bombers are both stealthy and non-stealthy by design and are built to serve in different battlefield environments. The US is the only country operating long range stealth strategic bomber aircraft—the flying wing model B-2. This aircraft is designed to operate in a heavily defended air space and have a primary role of kicking the door open, like Suppression and Destruction of Enemy

3. Richard D. Fisher, "Chinese Bomber Exercise Affirms Air-Defence Identification Zone, Penetrates Second Island Chain", *IHS Jane's Defence Weekly*, December 1, 2015, http://www.janes.com/article/56327/chinese-bomber-exercise-affirms-air-defence-identification-zone-penetrates-second-island-chain . Accessed on November 2, 2016.
4. "More than 40 Chinese Communist Air Force Flew More than 40 Warplanes Overflew the Miyako Strait", *Central News Agency*, September 25, 2016, http://www.cna.com.tw/news/acn/201609250197-1.aspx. Accessed on October 31, 2016.
5. Andrew Tate, "PLAAF Deploys 40 Aircraft to Western Pacific in Show of Strength", *IHS Jane's Defence Weekly*, September 27, 2016, http://www.janes.com/article/64114/plaaf-deploys-40-aircraft-to-western-pacific-in-show-of-strength. Accessed on November 2, 2016.
6. "China has Quietly Exceeded the Number of Russian Bombers Approaching US Levels", *Chubun*, September 23, 2016, http://www.chubun.com/modules/article/view.article.php/c108/166801. Accessed on October 31, 2016.

Air Defence (SEAD and DEAD) operations and taking out high value targets behind fortressed enemy positions. At times, depending on the circumstances, these aircraft have also been used in the normal bombing role.

The other non-stealthy bomber aircraft like the B-52 and the Russian Tu-160 and Tu22M3 are used for high-level bombing to deliver high tonnage of ordnance, as these aircraft can carry large payloads. The non-stealthy bombers are used in the less contested air space which has, usually, already been sanitised by stealth and other ground strike aircraft. These are the two strategies employed by countries with long range bomber fleets. Unlike the B-52, the Tu-160 and Tu-22 category of aircraft depend on speed for deep penetration strikes into enemy territory, however, with modern advanced air defence systems, the survivability rate of such aircraft is low.

There are speculations regarding the type of strategic bomber aircraft China is developing. There are three possibilities, as speculated by analysts. First, China might improve upon the existing H-6 bomber variant, including modifications to the airframe. Second, a new design of a non-stealthy bomber variant, which might possibly be supersonic. Third, a flying wing stealth bomber like the US B2 aircraft. The kind of future bomber will be heavily dictated by China's technological capabilities and future military requirements. These two factors could be analysed to guess the most probable variant on the future bomber.

Chinese future military requirements, as said, will be one of the factors pushing the requirement for a bomber aircraft. Going by the current security scenario, China has adopted the former Soviet strategy of Anti-Access/Area Denial (A2/AD) or what it terms as the 'counter-intervention' strategy. This strategy is mostly sea-bound with some vital targets located in the landmass of Japan, Taiwan and, probably, South Korea (in the event of the US basing its strike assets in the Korean peninsula). This scenario primarily requires a long range anti-ship cruise missile launcher which the People's Republic of China (PRC) already has in the form of the twin H-6K. If China actually intends to replace this bomber with an advanced variant, then the new variant should have advanced capabilities. Some speculations by Chinese Air Force experts claim that the new bomber will have

four turbofan engines which would probably be the WS-10.[7] A four turbofan engine will provide much better fuel efficiency and, hence, longer range as well as redundancy. Theoretically speaking, a quad engine configuration will be more suitable if China intends to use indigenous turbofan engines which as of now have heavy reliability problems. Otherwise, the downside of having a quad engine aircraft is that China's dependence on Russian military turbofan engines would go up, resulting in import of thousands of engines, unless China manages to pull off a reliable indigenous turbofan engine which it is currently working on. One other possible indicator of a four engine aircraft is that it is being designed for larger payload carrying capacity, meaning, for heavy bombing runs.

The possibility of improving upon the existing H-6 variant is low as the PLAAF chief has specifically pointed out that it would be a new bomber. Moreover, the airframe would restrict the extent of improvement in terms of avionics, payload, speed and range. However, it is possible that the new aircraft may be based on the H-6 airframe design but be larger in size to suit the modern combat requirements. Such a long range Anti-Ship Cruise Missile (ASCM) carrier aircraft would increase the area denial capability of China to a longer distance which might, at the least, restrict US fighter sortie generation rates, forcing the adversary to limit the long range bomber aircraft sorties.

The same aircraft would also serve to deliver air-launched Land Attack Cruise Missiles (LACMs) on land-based targets, particularly for counter-air strikes against air bases in Japan and Taiwan from inside the protected Chinese air space, and against Guam. The aircraft would be much like the subsonic H-6K, but with extended range for maritime strike roles. In the current defence scenario in the East Asian region, China cannot hope to suppress the air defence of its adversary and, hence, will have to focus on sticking to other advantages like standoff range LACM delivery, speed and stealth.

Another possibility is a strategic long range supersonic bomber aircraft with a primary role to deliver both land attack and anti-ship cruise missiles. The nature of this aircraft, if designed with a quad

7. n. 1.

engine, could resemble the Russian Tu-160 Blackjack modified to deliver Chinese cruise missiles, in which case the aircraft could go supersonic and the bomber will likely have an internal bomb bay to carry cruise missiles in addition to external hard points. Regarding the engine, if China decides to use its indigenous power plant, the Shenyang WS-10A, then the aircraft would have less thrust to weight ratio, as its advertised maximum thrust with full afterburner is 132 kN[8] while the NK-32 engine which powers the Tu-160 delivers a maximum after-burning thrust of 245kN. Therefore, domestic engines might not be suitable for the new bombers and, hence, China would most probably go for Russian engines. Nevertheless, if China still sticks to indigenous WS-10A turbofans, then the aircraft might not have supersonic capability. Rather, if designed as a twin engine aircraft of similar class, it could turn out to be similar to the Tu-22M3 Backfire – the long range strategic bomber and maritime strike aircraft.

China, some years ago, had unsuccessfully tried to buy the Tu-22M3 Backfire aircraft from Russia.[9] This might be an indicator that Chinese military leaders feel the need for such an aircraft to strengthen their 'counter-intervention' capability. Though the bomber is nuclear capable, the PLA might probably not see a nuclear role for the aircraft, rather the requirement would have been long range maritime strike role and land attack. It is to be noted that both the Tu-22M3 and Tu-160 have much longer range than the H-6K, and are supersonic as well. The maritime strike role was one of the primary tasks for which both these aircraft were built by the Soviet Union.

The other possibility that China would go for a bomber similar to the B-52 is very feeble as the Chinese military is far from achieving the capability for complete air supremacy. Bombers like the B-52s are highly vulnerable to even less sophisticated air defence systems. Hence, there is little chance that China will opt for this type of platform. The United States Air Force has used it mostly in uncontested or a less restricted air space.

The other high likelihood is for China to go for a flying wing stealth bomber like the B-2. There are reports that claim that the PRC

8. "Shenyang WS-10", All-Aero.com, http://all-aero.com/index.php/contactus/64-engines-power/13531-shenyang-ws-10. Accessed on November 14, 2016.
9. n. 1.

has already built part of the aircraft.[10] In 2014, there were reports indicating that a stealth bomber is being developed by the First Aircraft Institute of the Aviation Industry Corporation of China (AVIC). However, the Xian Aircraft Industrial Corporation and the Shenyang Aircraft Corporation began conceptualisation of the programme a decade ago.[11] Several graphic model images of the bomber have been doing the rounds on the Internet for some time. The images show two models: one is a flying wing design which resembles the US B-2 stealth bomber with the engine located above the wing and tucked inside, while the other model appears to be a mix of the flying wing model and YF-23 design. However, the authenticity and veracity of these images cannot be confirmed due to the lack of any official comments. China had clandestinely obtained B-2 stealth technology several years ago. Some years ago, an Indian American named Noshir Gowadia was convicted by the US courts for illegally selling B-2 and other stealth related design information to China.[12] The technology included Infrared (IR) suppression information which is allegedly used in one of China's cruise missile exhausts.[13] It is to be noted that Noshir Gowadia designed elements of the B-2 aircraft. Apart from this, in 2012, it was reported that Chinese hackers stole stealth secrets of the F-35 Joint Strike Fighter (JSF), which was later admitted by US officials.[14] Such a stealth aircraft would not be supersonic and, hence, the domestic WS-10 engine might be suitable, if its reliability improves by the time the project materialises. An aircraft like the B-2 would enhance China's deep penetration strike capability and

10. Franz Stefan-Gady, "China Confirms Development of New Long-Range Bomber", *The Diplomat*, September 7, 2016, http://thediplomat.com/2016/09/china-confirms-development-of-new-long-range-bomber/. Accessed on October 31, 2016.
11. D.Collins,"Long-Range Stealth Bomber Under Development in China", *The China Money Report*, January 21, 2014, http://www.thechinamoneyreport.com/2014/01/21/long-range-stealth-bomber-under-development-in-china/. Accessed on October 26, 2016.
12. Peter Foster, "Engineer Jailed for Selling US Stealth Bomber Technology to China", *The Telegraph*, January 25, 2011, http://www.telegraph.co.uk/news/worldnews/northamerica/usa/8280233/Engineer-jailed-for-selling-US-stealth-bomber-technology-to-China.html. Accessed on October 27, 2016.
13. "China Missile Chronology",*NTI*, http://www.nti.org/media/pdfs/china_missile.pdf?_=1316466791. Accessed on November 15, 2016.
14. Bill Gertz, "China Hacked F-22, F-35 Stealth Jet Secrets", *The Washington Free Beacon*, March 24, 2016, http://freebeacon.com/national-security/china-hacked-f22-f35-jet-secrets/. Accessed on November 15, 2016.

immensely increase the utility of the non-stealthy aircraft for follow-on strikes. However, there are certain negatives regarding China developing such an aircraft.

It is also a question of how stealthy a Chinese B-2 can be, given the fact that the US, Taiwan and Japan have littered the East Asian area with powerful radars. Some of the radars are extremely high-power X-band radars. Though the B-2 technology is optimised to beat the X-band and S-band radar pulse, the high power could possibly reduce the burn through distance, thus, compromising stealth to some extent (this argument might need a detailed study). Moreover, the payoff in terms of cost versus stealth will be high for China, in addition to the massive maintenance efforts. In addition, it is to be seen if China would incorporate IR suppression at the engine exhausts of the bomber as neither the J-20 aircraft nor the J-31 have been incorporated with this technology.

These will be discouraging factors for the PLA when considering a B-2 type long range flying wing bomber aircraft. Nonetheless, if past weapon platform development trend in any indication, China might opt for the B-2 type aircraft as the pattern has been towards acquiring Western, particularly, high end platforms operated by the United States. The J-20 and the J-31 have extremely high resemblance to the F-22 and F-31 fighters respectively. Such a platform might augur well for the domestic audience as well, to improve the image of the Chinese Communist Party and the armed forces.

Whatever be the long range system China builds, the immediate focus would be to enhance, what it calls the 'counter-intervention' strategy. There is also the possibility of the recent performance of the Russian bombers on targets in Syria having an influence on Chinese military planners. The Chinese, known for their study of foreign campaigns and deriving lessons out of these to modernise their military, might have taken a leaf out of the recent Russian bombing campaign in the Middle East. It is also to be noted that the 'counter-intervention' strategy itself was adopted from Russia and most of the systems which strengthen that strategy are of Russian origin.

Despite its airframe limitations, China at present has what it needs for stand-off cruise missile delivery – the H-6K. Its combat

radius of 3,300 km[15] is sufficient for the South China Sea region. Again on the Eastern Pacific side, the H-6K combat radius is, theoretically, ample to keep any carrier-based strike aircraft out of reach from the Chinese shore. Despite this, if China is looking to build a new long range bomber, it means that the new bomber will be built with much better penetrating capacity either in terms of stealth or speed and longer range to increase the sanitising range or to increase on-station loiter time or both. Even if China does not manage to build a fully stealth platform, the aircraft can be expected to have significantly lower radar cross-section as well as standoff cruise missile delivery capability. However, the planned early materialisation of the project will depend on the status of the power plant. Military aero-engines, going by the present nascent stage, will continue to haunt China's military aircraft projects, including the future bombers.

If China opts for the Tu-22 or Tu-160 type aircraft, which was specifically designed for A2/AD role, then it might as well add powerful Electronic Warfare (EW) equipment to the same aircraft or might go for a dedicated aircraft for such a task. It is to be noted that the Soviet Union had the strike, reconnaissance and electronic warfare aircraft for jamming as part of the maritime strike tactics.[16] However, none of the PLA H-6 is known to have been fitted with the EW jammer suit for dedicated jamming. So it is to be seen if the PLA will fully adopt the effective Russian maritime strike equipment and tactics. China needs long range maritime EW aircraft to strengthen its counter intervention strategy.[17] Clearly there is a possibility that the Chinese might take Russian help in developing powerful EW jamming suits to plug the gap in their maritime strike capability.

15. "China Confirmed That is Developing the Next Generation of H-6K Bomber or a Larger Version", *Sina Military*, October 15, 2016, http://mil.news.sina.com.cn/jssd/2016-10-15/doc-ifxwvpaq1363169.shtml. Accessed on November 14, 2016.
16. Carlo Kopp, "Soviet Maritime Reconnaissance, Targeting, Strike and Electronic Combat Aircraft ", *Air Power Australia*, updated on April 2012, http://www.ausairpower.net/APA-Sov-ASuW.html. Accessed on November 15, 2016.
17. "Russian Media: China Needs High-Speed Long-Range Bombers for Nuclear Containment", China.com, September 2, 2016, http://military.china.com/important/11132797/20160924/23633578.html. Accessed on November 15, 2016.

THE TODDLER TERRORISTS: THE CHILD SOLDIERS OF THE ISLAMIC STATE

AERSH DANISH

Humanity has been plagued with the problem of terrorism since the beginning of civilisation, but the idea of what constitutes an act of terror, and who is a terrorist has evolved over the years. Terrorism has evolved from a 'means to an end' tactic, to a complete phenomenon in itself. Further, the concept of a terrorist has changed as well—from extremist individuals who are radicals in their beliefs, to well organised cadres rallying for a cause. Today's modern society is struggling to cope with the changing image of a terrorist– from bearded slightly older men in robes, to younger men in combat uniform. What is worrying is that, in the modern world, this concept of "young" has been stretched so much that it has become an epistemic anomaly. What would otherwise be a word used to refer to men in their twenties, obsessing over the idea of how the world should be, has now come to represent the images of children who have barely lived a decade of their lives. All known notions of universal human rights that stood sacred, now stand crushed in front of the 10-year-old in combat gear, holding an automatic rifle, with a suicide vest strapped on his or her body. *These are mere children, who are not playing games, but playing with their lives, and the lives of many others.*

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This paper looks at the use of child soldiers by the Islamic State (IS)—primarily at how the children are recruited and trained by the terrorist group. The paper also attempts to understand the process of deradicalisation of these children, with a focus on the problems of deradicalisation in Iraq and Syria.

CHILDREN AND SOLDIERS

Children have increasingly become crucial components of armed conflicts – and not just as victims. Recruitment of children as soldiers and in support roles has become a major point of concern for the international community. Some of these children work voluntarily, others are beaten into submission or indoctrinated to participate. Whatever be the cause, the use and abuse of children in armed conflict is not just morally and ethically wrong, it is illegal as well. Recruiting and using children under the age of 18 as soldiers is prohibited under international humanitarian law – treaty and custom – and is defined as a war crime by the International Criminal Court. As per the Paris Principles on the Involvement of Children in Armed Conflict 2007, a child soldier is defined as:

> A child associated with an armed force or armed group refers to any person below 18 years of age who is, or who has been, recruited or used by an armed force or armed group in any capacity, including but not limited to children, boys and girls, used as fighters, cooks, porters, spies or for sexual purposes.[1]

The United Nations (UN), under the Office of the Special Representative of the Secretary-General for Children and Armed Conflict, has been monitoring the cases of children in conflict. The secretary general of the UN presents his annual report on the matter, making a country-wise assessment, and recommends policies for the General Assembly and the Security Council to act on. The 2016 report, released on April 20, 2016, mentions Afghanistan, Central African Republic, Democratic Republic of Congo, Iraq, Israel and the

1. The Paris Principle: Principles and Guidelines on Children Associated with Armed Forces or Armed Groups, February 2007, p.7, https://www.unicef.org/emergencies/files/ParisPrinciples310107English.pdf. Accessed on November 7, 2016.

State of Palestine, Lebanon, Libya, Mali, Myanmar, Somalia, South Sudan, Sudan, Syria, Yemen, Colombia, India, Nigeria, and Pakistan as countries where either the state forces, or one or more non-state actors have practised recruitment of children. The Islamic State of Iraq and Levant (ISIL), also known as the Islamic State (IS) has been listed along with other major terrorist groups such as the Taliban, Hizb-e-Islami, Haqqani Network, Al Shabaab, Al Qaeda, Abu Sayyaf Group and Boko Haram.[2]

While in terms of numbers, the IS is not the largest recruiter of children, the widespread notoriety of the group, and its global impact, makes it a far greater threat to international peace and security than most of the other perpetrators. The manner in which the IS promotes its activities in mainstream and social media, further helps it to draw more attention towards itself, as also to promote its cause. Thus, the use of child soldiers by the IS has incited a major outcry and anger from different quarters of the world.

THE CUBS OF THE CALIPHATE

The IS released a video on August 26, 2016, showing its member executing a Kurdish prisoner.[3] The video is similar to the previous releases by the terrorist group, where terrorists in combat uniform kill prisoners dressed in orange jumpsuits; however, what stands out in this particular video is that the executioners are five children whose ages are in the range of 10 to 13 years. One of them is British, and others are suspected to be Egyptian, Tunisian, Kurdish and Uzbek.[4]

This is not the first time children have featured in an IS video. In January 2016, a young Kazakh boy was filmed as he shot a man in the back of the head; in March 2015, an IS video showed a French child, barely 11 years old, executing a Palestinian accused of spying for the

2. Annual Report of the Secretary-General on Children and Armed Conflict (S/2016/360), April 20, 2016, http://www.securitycouncilreport.org/un-documents/children-and-armed-conflict/. Accessed on November 7, 2016.
3. Ben Farmer and Magdy Samaan, "'British Boy' Shown Killing Prisoners in New Isil Video", *The Telegraph*, August 26, 2016, http://www.telegraph.co.uk/news/2016/08/26/british-boy-shown-killing-prisoners-in-new-isil-video/. Accessed on November 7, 2016
4. Vishakha Sonawane, "ISIS Video: British Boy Among 5 Child Executioners Who Allegedly Shot Dead 'Atheist Kurd' Prisoners", *International Business Times*, August 27, 2016, http://www.ibtimes.com/isis-video-british-boy-among-5-child-executioners-who-allegedly-shot-dead-atheist-2408036 . Accessed on November 11, 2016.

Israeli government; in May 2015, a young Russian was shown killing an alleged member of the Federal Security Service; in June 2015, 25 teens were filmed as they each shot a pro-Assad regime soldier in Palmyra's Roman Theatre; and, less than a month later, in July 2015, the IS supporters circulated footage of a young Syrian boy beheading an officer, also in Palmyra. In one such video, six small boys were shown playing a game of hide-and-seek, running through the ruins of a castle in eastern Syria, racing against each other to kill captives who were tied up and defenceless inside.[5]

These children are what the IS calls "*Cubs of the Caliphate*" – trained killers and foot soldiers, who do their bidding in the name of the perverted ideologies that the group prescribes to. The concept may sound grotesque but it serves the terrorist group well, as children are an easily available resource and have malleable minds, which can be shaped in the way the group wants. These children not only serve as a cheap and obedient reserve of foot soldiers, they also help to ensure that the group nurtures a whole new generation of terrorists. The IS' use of child soldiers has reinvoked the images of medieval barbarity, when children were trained as spies, foot soldiers, watchmen, messengers, recruiters and, ultimately, as killers.

LEARNING FROM A PAEDOPHILE'S TEXTBOOK

The question that arises is: why are the children doing what they are doing? Most of them are too young when they are absorbed into the group to understand what they have got themselves into. Some, as mentioned earlier, are forced into it, while others come voluntarily. Children have been known to join armed groups to protect themselves, fearing for their own lives – often being threatened by the group itself. Some may join to escape poverty, or to defend their communities, or because of a feeling of revenge or hatred.

The pertinent question then becomes, how is the IS recruiting children and turning them into terrorists? One comprehensive study on the subject has been carried out by Mia Bloom, John Horgan, and

5. Charlie Winter, "Shocked by the 'Cubs of the Caliphate'? Of Course, You Are – That's Isis's Plan", *The Guardian*, January 5, 2016, https://www.theguardian.com/commentisfree/2016/jan/05/cubs-of-caliphate-isis-children-videos-propaganda. Accessed on November 11, 2016.

Charlie Winter.[6] Bloom *et al* found that the process seems largely akin to the methods employed by a paedophile preying on children. The process starts with gradual familiarisation, followed by incremental desensitisation, just as a paedophile who lures a child with gifts, and makes him comfortable first, and then gradually desensitises the child to the idea of abuse.

The recruitment of children begins with socialisation. This is done by organising small events where the child is informed about the perks of being an IS member. Such events are organised in community centres and on the streets, and children are lured in with sweets. These are usually low scale events to raise awareness about the group. Children are given food and toys for just attending them, with assurances of better gifts if they attend these events regularly. Apart from such events, children are also recruited directly from IS operated schools and orphanages. Since Syria fell apart, many of the schools were taken over by the IS, where a curriculum approved by the group is being taught. In these schools, IS personnel keep a look out for children exhibiting academic and physical prowess, who are then picked up, and subsequently trained.

Once picked up, the intensity of IS activities that the children are exposed to is increased gradually. An incremental approach is taken to desensitise the children towards violence. They are shown video clips of shootings and executions, first to acclimatise them to the concept of killing. They are told why the victim was killed and how it was justified to kill him. Thus, along with the desensitisation, the indoctrination of the children begins. Gradually, from watching videos of the executions, the children are made to witness live executions, and are even encouraged to participate in them progressively.

6. For a complete assessment of their work, please refer to Mia Bloom, "Cubs of the Caliphate: The Children of ISIS", *Foreign Affairs*, July 21, 2016, https://www.foreignaffairs.com/print/1114916; John Horgan and Mia Bloom, "This Is How the Islamic State Manufactures Child Militants", *Vice News*, July 8, 2015, https://news.vice.com/article/this-is-how-the-islamic-state-manufactures-child-militants ; Mia Bloom, John Horgan and Charlie Winter, "Depictions of Children and Youth in the Islamic State's Martyrdom Propaganda, 2015-2016", *CTC Sentinel*, February 2016, pp. 29-32; Charlie Winter, "Shocked by the 'Cubs of the Caliphate'? Of Course, You Are – That's Isis's Plan", *The Guardian*, January 5, 2016, https://www.theguardian.com/commentisfree/2016/jan/05/cubs-of-caliphate-isis-children-videos-propaganda. Accessed on November 13, 2016.

The children soon learn that even peripheral participation would be richly rewarded. It starts with the children standing next to, or behind, the executioner, and shouting slogans. A few pick up the IS flags and weapons, and wave them – as is seen in some of videos. The children are praised for waving weapons and playing with the decapitated heads. Eventually, such public executions become a matter of routine for the children, who then begin to internalise the violence and accept it as normal.

THE PRODUCTION LINE

Once desensitised, the training begins, which is also incremental. The children are first trained as spies to keep a watch, and inform, on family members, friends or neighbours who break the rules imposed by the IS or criticise the group. Younger children who display an aptitude for communicating ideology are deployed as recruiters, and are placed in a public speaking role to find and recruit more children— a role in which they are often more articulate and persuasive than their adult counterparts. Thus, children, in turn, lure other children.

The ones who show physical acumen, are put under a rigorous training session that can last between 30 to 50 days. They are put under immense duress to test their mental and physical limits. Bloom and others argue that even though the process sounds gruesome, such training helps in the formation of bonds of camaraderie between the trainees, built out of shared common experiences – and gradually these bonds create a deep sense of pride in what they are doing. Further, specialised training is provided to the children for different roles such as guard duties, operating weapons and suicide vests, propaganda training, etc.

The IS' cubs programme has been very carefully planned out. By absorbing the children at such tender ages, it ensures that it becomes a path of no return. By making that the children participate early in the programme, the IS ensures that they would not be accepted back into the society. Sometimes, their families are killed to ensure that they have nowhere to go back to. Once all their escape ways are closed, the child is trapped in the one-way system.

Also, the entire process uses the psychology of competitive rewarding as the children who perform more, are better rewarded. This provokes the inherent sense of competition and prestige within the children to participate more in the horrendous deeds to stand out against their peers, and to earn a "cub" status. Bloom writes about how fully trained cubs are paraded in front of other children in full uniform, carrying weapons to generate a sense of accomplishment. IS propaganda videos show newly graduating children standing rigid in combat attire, while they are beaten with sticks by adult commanders. In the background, dozens of younger children can be seen looking on, seemingly impressed by the young masked recruits able to endure the physical rigours of "training."[7]

CHILDREN, NOT SOLDIERS

The IS is not the first group in the world to use child soldiers. Militant groups such as the Sri Lankan Liberation Tigers of Tamil Eelam (LTTE), Boko Haram, various African militant outfits, the Lebanese Hezbollah, and even the Taliban have been known to use children as soldiers in their battles. Further, history is rife with instances where children have been used not just as weapons but also as shields. The empires of medieval Europe relished in a similar showcase of grotesque brutality. Much before the UN codified the rights of children, the world had a different view of what young boys and girls could, and should, do.

The IS is, in a way, reviving an age old practice in an era that has moved away from such barbarity. One is looking at a group that is not bothered by existing constructs of right and wrong. When they delve deep into history, the IS is successful in fishing out stories that not only defend but also allow such practices, and, hence, rationalising with them on this regard is impossible. Further, young soldiers ensure the survivability of the group, and, hence, are one of the safest choices to make for a group.

7. John Horgan and Mia Bloom, "This Is How the Islamic State Manufactures Child Militants", *Vice News*, July 8, 2015, https://news.vice.com/article/this-is-how-the-islamic-state-manufactures-child-militants. Accessed on November 11, 2016.

The IS is (mis)using children not just from Syria and Iraq, but from across the world – once again reflecting on their outreach. The result of this is manifested through the "cubs" who are now full bred soldiers of the IS. Fighting an armed child is not as simple as pointing the gun at the child and pulling the trigger. A child is not an enemy one can get rid of by just killing him, and the fight against the IS has to develop an action plan to address this problem. The IS appears to be on a decline with the fight against the group closing down on its strongholds of Raqqa, Aleppo and Mosul. The resulting loss for the IS also means that a large number of terrorists are being neutralised. The adult terrorists who are caught would be tried for the crimes they have committed, but child soldiers cannot be treated in the same manner. International Humanitarian Law, as codified through the four Geneva Conventions of 1949, disbars the recruitment of children in an international conflict, however, if a child has played a direct role in an international armed conflict, he/she can be recognised as a combatant, and in the event of being captured, entitled to Prisoner of War (PoW) status under the Third Geneva Convention. That being said, children are entitled to privileged treatment, and they continue to benefit from the special protection accorded to them by International Humanitarian Law, especially Article 77 (3) of the Additional Protocol I, and Article 4 (3) (d) of the Additional Protocol II, which were adopted in 1977, both of which look at child recruits as victims, and not as perpetrators of violence. Furthermore, the UN Convention on the Rights of the Child, under Article 39 expressly obliges states to take all appropriate measures to promote the physical and psychological recovery and social reintegration of a child victim.

LOST CHILDHOOD

This compels us to think that the solution lies in deradicalisation. The children need to be put under a specially designed de-radicalisation programme, and gradually reintroduced back into the society. Several attempts are being made to deradicalise children who have been inducted by militant groups across the world. De-radicalisation begins with monitoring and reporting, and the UN under the Security Council Resolution 1612, has developed a

Monitoring and Reporting Mechanism (MRM) on Grave Violations against Children in Situations of Armed Conflicts, which involves the UN International Children's Education Fund (UNICEF), the UN Department of Peacekeeping Operations and the Office of the Special Representative of the Secretary-General for Children and Armed Conflict. The protection of children in conflict has been included in the mandates of UN peacekeeping operations since 2001. Peacekeepers, both civilian staff and soldiers, have a specific and significant role to play. Child protection advisers alert the special representative to violations against children. The advisers collect and verify data for the Secretary-General's Annual Report on Children and Armed Conflict. They also develop action plans with armed groups and forces for the release of children. Judicial affairs officers also work with the local population to ensure that the protection of children is included in the national legislation.[8]

The Office of the Special Representative of the Secretary-General for Children and Armed Conflict lists 24 parties that have signed 25 action plans, which include 11 government forces and 13 non-state armed groups. The office says that of these, nine parties have fully complied with their action plans, and were subsequently delisted.[9] Table 1 lists the countries, along with the details on their action plans with the armed forces and armed groups.

8. Monitoring and Reporting, Office of the Special Representative of the Secretary-General for Children and Armed Conflict, https://childrenandarmedconflict.un.org/our-work/monitoring-and-reporting/. Accessed on November 13, 2016.
9. Action Plan with Armed Forces and Armed Groups, Office of the Special Representative of the Secretary-General for Children and Armed Conflict, https://childrenandarmedconflict.un.org/our-work/action-plans/. Accessed on November 13, 2016.

Table 1: Country-wise List of Action Plan with Armed Forces and Armed Groups

Afghanistan	Afghan National Security Forces (ANSF) – January 30, 2011.*Under implementation.
Central African Republic	Armée Populaire pour La Restauration de La Démocratie (APRD) –October 19, 2011; Convention des patriotes pour la justice et la paix (CPJP) – November 20, 2011.
Chad	Armée Nationale Tchadienne (ANT) –June 15, 2011. *Delisted in 2014 following compliance with action plan.
Cote d'Ivoire	Forces Armées des Forces Nouvelles (FAFN) – November 2005; Front de libération du Grand Ouest (FLGO) – September 2006; Mouvement Ivoirien de Libération de l'Ouest de la Côte d'Ivoire (MILOCI) – September 2006; Alliance patriotique de l'ethnie Wè (APWé) – September 2006; Union patriotique de résistance du Grand Ouest (UPRGO) – September 2006.*Parties delisted following compliance with Action Plan.
Democratic Republic of Congo	Forces Armées de la République Démocratique du Congo (FARDC) – Action plans on recruitment and Sexual Violence – October 4, 2012. *Under implementation.
Myanmar	Tatmadaw Kyi – June 27, 2012. *Under implementation.
Nepal	Unified Communist Party of Nepal Maoist (UCPN-M) – December 16, 2009. *Delisted in 2011 following compliance with Action Plan.
Philippines	Moro Islamic Liberation Front (MILF) – July 2009. *Under implementation.
Somalia	Transitional Federal Government (TFG) – July 3, 2012 and August 6, 2012. *Under implementation.
South Sudan	Sudan People's Liberation Army (SPLA) – March 12, 2012(Signed as the country's armed forces following independence in 2011); Recommitment to Action Plan signed on June 24, 2014. *Under implementation SPLM/A- in Opposition – December 2015 *Under implementation.
Sri Lanka	Tamil Makkal Viduthalai Pulikal (TMVP) – December 1, 2008. *Delisted in 2011 following compliance with Action Plan.

Sudan	Sudan People's Liberation Army (SPLA) – November 2, 2009 – Signed as an armed group before South Sudan's Independence; Sudan Liberation Army Minnawi (SLA Minnawi) – June 11, 2007; Sudan Liberation Army Free Will (SLA/Free Will) – June 2010; Sudan Liberation Army Abu Gasim (SLA/ Abu Gasim) – August 2010; Sudan Government security forces, including the Sudanese Armed Forces (SAF), the Popular Defence Forces (PDF) and the Sudan Police Forces – March 27, 2016. *Under implementation.
Uganda	Uganda People's Defence Force (UPDF) – August 2007. *Delisted in 2008 following compliance with Action Plan.
Yemen	Yemeni Government Forces (YGF) – May 14, 2014. *Under implementation.

Source: Action Plan with Armed Forces and Armed Groups, Office of the Special Representative of the Secretary-General for Children and Armed Conflict, https://childrenandarmedconflict.un.org/our-work/action-plans/.

States have also taken it upon themselves to deradicalise child soldiers even if they are not party to any special agreement with the UN. An example of one such step taken is the Sabaoon Rehabilitation Centre – a rehabilitation institute in Mingora, Swat, Pakistan. The centre is run by the Pakistan Army with the help of the Hum Pakistani Foundation (a Non-Governmental Organisation—NGO) and UNICEF.[10] The 2016 Annual Report of the Secretary-General to the Security Council on Children and Armed Conflict mentions the Tehreek-e-Taliban (TTP) and other groups for recruiting children and giving them military training, through religious schools.[11] The Sabaoon programme which was started in 2009 attempts to tackle this issue, started with 35 children who were rescued. The institution is located in a remote area, and its security is ensured by the Pakistan Army. Here, under the supervision of trained psychologists, teachers and religious scholars, an attempt is being made to rehabilitate and reintegrate these children back into the society. They are provided with regular education, and are encouraged

10. Bina Shah, "In Search of Safety: Children in the Shadow of the Taliban", 91st Meridian, University of Iowa, https://iwp.uiowa.edu/91st/vol7-num2/in-search-of-safety-children-in-the-shadow-of-the-taliban. Accessed on November 13, 2016.
11. n. 2, p. 36.

to take up arts and sports. The heavily guarded facility ensures that the children are kept safe, while they recover from their violent past.[12] Some students do show a tendency to relapse into their past lifestyle, but they are closely watched, and kept in the premises till deemed safe to be reintroduced back to society.[13] It is a slow and tedious process, but is a start, nonetheless.

While deradicalisation is essential, and steps towards this are being taken by many nations, the success rates of these programmes are yet to be measured. Deradicalisation, especially for children, had to be tailor-made to suit the victim's situation, which makes it extremely difficult to execute. The problem is not just with the re-integration of the child back into the society. Steps have to be taken to make up for the lost period – in terms of education and mental growth. Reintegration from the society's perspective is also important to ensure that the surroundings are willing to accept a former child soldier back into mainstream. Stigmatisation is a major issue with child soldiers, and it is possible that even after the deradicalisation, they will find themselves not accepted. Thus, a monitoring system has to be in place post the deradicalisation to ensure that the child is being well attended to, and also to make sure that he does not go back to his old ways.

Thus, the challenges are many, but the first step is the initiation of a deradicalisation programme, which many affected countries have still not looked into.

THE VACUUM IN IRAQ AND SYRIA

The Sabaoon programme and the other initiatives mentioned above are examples of actions taken by governments, inter-governmental bodies, and non-governmental organisations to tackle the problem of children being recruited in armed conflicts. In the case of Iraq and Syria, the state actors are yet to begin any such initiative. While literature on the successes or failures of such programmes is very difficult to find, such steps are indications of responsible state behaviour. The lack of

12. n. 9.
13. Cathy Scott-Clark and Adrian Levy, "How to Defuse a Human Bomb: Rescuing the Taliban's Teenage Recruits", *The Guardian*, October 16, 2016, https://www.theguardian.com/world/2010/oct/16/defuse-human-bomb-taliban. Accessed on November 13, 2016.

action by any party in Syria and Iraq is a matter of concern, and it makes the scenario much more difficult. While bringing an end to the conflict in Iraq and Syria is of vital importance, steps have to be taken to ensure that children are not lured into this macabre business during the conflict. However, the scale of violence that is being unleashed in the region does make it very difficult for child right groups to operate there. In such times, much of the responsibility would fall on the local community to ensure that children are protected. The family plays an important role in rehabilitation, and in the case of the IS' child soldiers, it becomes a difficulty, as the IS either kills the families, or the children are born to IS members. Without a fallback option, and with a state that is too preoccupied to address the issues of child rights, deradicalisation and rehabilitation become exceedingly difficult. How to take these children out of the clutches of violence is something that the international community needs to think about.

While the world comes together to combat terrorism, the battle for the rights of these children is often lost in the greater war to end terrorism. Meanwhile, these children are continuously exploited by the terrorist groups. Often, humanitarian issues take a back seat in such military campaigns, but one forgets that unlearning is far more difficult than learning, and unlearning a life that one has lived since one was a child is a task next to impossible. This makes rehabilitation of these children a matter of great priority, or else they will remain caught in the trap of crime and violence. The challenge is immense, but it still requires the attention of the global community, and one has to ensure that the necessary actions are taken, lest one ends up facing an enemy that will be very difficult to fight.

"RIGHT TO BE FORGOTTEN" IN THE DIGITAL AGE: ETHICS AND COMPLIANCE CHALLENGES

ASHISH GUPTA

The human memory is a cognitive system which includes comprehending, storing, remembering and forgetting. As important as remembering, forgetting is instrumental in cognitive processing and in construction of new identities. The human memory is characterised by a seemingly endless storage capacity coupled with a retrieval capacity that is subjective and limited. An inability to forget traumatic events and life stressors may lead to conditions like depression and post-traumatic stress disorder. The natural process of ebbing away and fading of memories of terrible events facilitates us to move on with our lives. When we decide to *immortalise the memory* of some significant event or *heroic act of human triumph*, we create memorials. The relationship between memorials and forgetting is reciprocal: the threat of forgetting begets memorials, and the construction of memorials begets forgetting.[1] Forgetting is cognitively important for psychological well-being, mental health and quality of life, and irrevocably conditions our human and social existence.

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1. Paul Connerton, *How Modernity Forgets* (Cambridge: Cambridge University Press, 2009), p. 29..

The ubiquity of digital devices and omnipresence of the Internet has resulted in the proliferation of many platforms, which can be used to *preserve a memory* or event in the form of photographs, statements, displays, anecdotes, etc. In the process, we create digital memorials, which are easy to be replicated and distributed globally, and due to their pervasiveness, have far greater unintended *consequences* and *impalpable* ramifications. This has added an entirely new dimension to existing memory structures and processes. Until the proliferation of Information and Communication Technologies (ICT), an individual's memory was a manageable entity, contained within the confines of cognitive endowments and limited to use of objects for association (such as diaries, photo albums, letters, etc.) and as stimuli for creating memory signposts. The issue of forgetfulness was also central to the cognitive scheme of things. Unfortunately, forgetfulness is a virtue, which ICT is not well endowed with, and many digital platforms are not designed to be forgetful even when begged, prodded, pleaded and reasoned to do so. In the digital form, memory is just an arrangement of bytes in a memory chip, server or in the cloud.

From a digital perspective, eternal memorisation is the zenith, and oblivion the nadir of technological achievement and advancement. The contents—which may appear legitimate, socially relevant, politically correct, ethically earnest, aesthetically stimulating—once posted online may lose their legitimate status, temporal relevance and social applicability, but not their place in the interminable digital repository. They will remain retrievable, accessible, reproducible, and will come back to haunt some day. In the unforgiving digital realm, the traces of online activities will remain indelible even if we try to 'move away'. Thanks to its "eternity effect",[2] the Internet preserves bad memories, past errors, writings, photos or videos which we would like to deny later.[3]

The hybridisation of digital and physical space and diffusion of digital technology in all aspects of everyday life has brought a

2. S. Waltz, "Relationship Between the Freedom of the Press and the Right to Informational Privacy in the Emerging Information Society", Paper presented at 19th International Data Protection Commissars Conference, Brussels, September 17-19, 1997, n. 23
3. Cécile de Terwangne, "The Right to be Forgotten and the Informational Autonomy in the Digital Environment", in Â. G Pereira., A Ghezzi. and L.Vesnic Alujevic, eds., *The Ethics of Memory in a Digital Age: Interrogating the Right to Be Forgotten* (London : Palgrave Macmillan, 2014), p.82.

paradigm change in human behaviour, human interactions, social structures, economic systems and political institutions. These new social alignments and reconfigured behavioural patterns have transformed the approaches taken: to communicate, access information, conjure up a self-image, establish professional and personal connections, build relationships, acquire knowledge, react to global events, reflect upon the occurrences of the past, etc. Use of the Internet for uploading and retrieving information has become almost an automated process with little thought to its ramifications. The initial euphoria, enthusiasm and temerity that prods us to share online things which appear to be good, sensational and shocking, gives way to more sobering reflections and repenting thoughts, and a compelling need to wipe the slate clean of past associations/indulgences. But now it is not possible as the ownership and control of the data which was put online, is not with the originator of the data but with some company with the right to use it in ways it deems fit.

There is a growing demand from many Internet users, online activists and netizens to have the rights of ownership and control over the usage of their data across all processing phases, including the '**right to be forgotten'**, equally called the '**right to oblivion**'. There has been a number of debates and discussions around the central issue of the relevance of such a right in cyber space. However, most of these debates start with the premise that the right to be forgotten does not allow someone to erase traces of the past and rewrite it, rather it is to preserve the present from the supposedly corrosive influence of the past. The past is bygone, irrecoverable and need not to be stirred up again and again for the purpose of keeping individuals tethered to their past, and prevent them from moving on. The 'right to be forgotten' does not mean *erasure* or *modification* of past information, rather it means prevention of recurring acts of digging up the past.

THE ETERNITY EFFECT

The Internet—the eternal repository with an infallible memory—stores digital contents posted online without any ethical, legal or personal propriety considerations. The Internet preserves bad memories, past innuendos, errors of judgement, errors of perception, previous acts now deemed mistakes, disparaging writings, photos or videos,

and makes it difficult for us to redeem and rehabilitate ourselves by slaying the ghosts of the past.[4] The European Commissioner for Justice once remarked, "God forgives and forgets but the Web never does. With more and more private data floating around the Web – especially on social networking sites – people should have the right to have their data completely removed."[5]

EFFICIENT, AUTOMATED AND INTELLIGENT SEARCH ENGINES

Today, the search engines are incredibly efficient in digging out information from even obscure and forgotten sources; stripping it of much of its original context, and conjuring up heterogeneous assemblages of disjointed information to create scenarios contextually inaccurate and misleading. Such portrayals are associated with many negative outcomes for individuals trying to forget the past and move on with life. In cyber space, the vagaries, idiosyncrasies and eccentricities of the past are never forgotten and this indelibility of the past foreshadows efforts to reconstitute the present and future phases of life. The online disclosures made to recipients of a carefully chosen group (friends, family, and members of common interest groups) in a contextually and socially appropriate manner, are unearthed by the smart search engines and made accessible outside of the group and context.

THE ECONOMIC COST OF ERASING

With exponentially growing storage capacities, the cost of storing data has plummeted, so safekeeping data with even a miniscule possibility of use in the future is no longer a cost burden.[6] In fact, sorting and selecting data for deletion is a resource and labour intensive process. Besides, normal, subtle or even fleeting traces left behind by the net surfers are utilised for target advertising, a

4. V. Reding, vice-president of the European Commission, responsible for justice, fundamental rights and citizenship privacy matters, "Why the EU Needs New Personal Data Protection Rules?"(The European Data Protection and Privacy Conference, Brussels, November 30, 2010), http://europa.eu/rapid/pressReleasesAction.do?reference=SPEECH/10/700. Accessed on October 20, 2016.
5. Waltz, n.2.
6. Terwangne, n .3, p. 85.

marketing concept aimed at addressing a specific target group.[7] The information garnered through cookies following web-surfing, Internet Protocol (IP) addresses retention, suffering patterns and preferences, search requests on search engines, etc., all become a treasure trove that marketers use to identify and track the habits of consumers. Many of the services and products on the Internet are free of charge for consumers and as the consumer is not the payer, Internet companies count on others to pick up the tab. These are financed by the companies that collect and/or store consumer data for targeted advertising and behavioural advertising. The commercial imperatives curb incentives to erase the collected information.

INFORMATIONAL AUTONOMY IN THE DIGITAL CONTEXT

The term 'informational autonomy', refers to the individual's interest in controlling the flow of personal information about himself, the interest referred to by the German Supreme Court as "informational self-determination"[8] (the German term is *"informationelle Selbstbestimmung").* Both the terms, in the digital context, mean that individuals have control over information about themselves. In other words, individuals have a right to determine which information about himself/herself is disclosed, to whom and to what purpose. The 'control' is not exclusive to, and extends beyond, the use of one's data, and includes the right to be aware of the method of collection, who is in possession of the data as well as *about its intended use*.[9]

The Council of Europe, formed in the aftermath of World War II to bring together the states of Europe to promote the rule of law, democracy, human rights and social development, adopted the European Convention on Human Rights (ECHR) in 1950, which entered into force in 1953. As part of the rights protected under Article 8 of the ECHR, "the right to protection of personal data" guarantees the right to respect for private and family life, home and

7. Christian Schlee, *Targeted Advertising Technologies in the ICT Space: A Use Case Driven Analysis* (Darmstadt: Springer, 2013), p. 9.
8. Helen Fenwick, *Civil Liberties and Human Rights* (London: Cavendish Publishing Limited, 2002), p. 531.
9. Terwangne, n .3, p. 82.

correspondence.[10] In 2012, the European Commission published a "Proposal for a Regulation on the Protection of Individuals with Regard to Processing of Personal Data and on the Free Movement of Such Data" (COM/2012/11)[11], which includes the "right to be forgotten" (RtbF). Article 17 of the proposal envisages the "right of erasure, rectification or blocking of personal data". The proposal, when interpreted in the context of the ubiquitous online environment in general and pervasive Internet in particular, becomes much more complicated and controversial due to the idiosyncratic and *sui generis* nature of cyber space. This proposal is aimed at informational self-determination and is linked with the right to be forgotten.

"RIGHT TO BE FORGOTTEN" AS FOCUS OF AN EVOLVING ETHICS DEBATE

Personal data submitted online in the past, when interpreted in contrived and decontextualised settings, may reflect personality traits in a negative light. The data, when viewed within its initial context does not lead to speculations or unsubstantiated conjectures rather highlights the events or episodes in true shades. The right to be forgotten does not entail that one has *a carte blanche* to seek erasure of personal data in totality, even when it is recontextualised. The data about an individual, when tethered to its initial context, provides a template to evaluate his/ her personality traits, which significantly differ from established social norms and can corrosively influence and bias others. Attempts at erasure of all traces from the online landscape that can link an individual to his or her past—which probably was marred with violence and criminal activities—may be construed as an attempt to cover up the culpability of that individual. On the other hand, keeping the past alive even when the past acts of crime or deviance have been meted out suitable

10. Handbook on European data protection law, European Union Agency for Fundamental Rights (FRA) and the Council of Europe, April 2014, http://fra.europa.eu/sites/default/files/fra-2014-handbook-data-protection-law-2nd-ed_en.pdf. Accessed on October 20, 2016.
11. EUR-Lex, Access to European Union Law, *Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the protection of individuals with regard to the processing of personal data and on the free movement of such data (General Data Protection Regulation)*, http://eur-lex.europa.eu/legal-content/en/ TXT/?uri=CELEX :52012PC0011. Accessed on October 20, 2016.

punishment or have been repented upon, hinders the motivation to 'move on'.

Terrorists and criminals can exploit the "right to be forgotten" to draw a veil over the past, and prevent attempts of detailed exposure of their terrorist and anti-social activities. In fact, criminals are having their convictions airbrushed from history even if they have, since, committed other, similar crimes. Terrorists have tried to gag Google in order to cover up stories about their trials.[12] In Japan, a man accused and convicted of breaking child prostitution and pornography laws, complained that the details of his case could be accessed whenever his name and address were entered into Google search. Taking cognisance of the complaint, a Japanese court ordered Google to remove news reports about the man who, according to the judge, deserved the chance to rebuild his life "unhindered" by records of his criminal past.[13]

In May 2014, in a major jurisprudential development in respect of the "right to be forgotten", in its judgment, the Court of Justice of the European Union (CJEU), in Google Inc. vs Mario Costeja Gonza´lez, affirmed the right of individuals to control their private data. The basis for Mr Costeja's complaint was that, whenever a Google search of his name was carried out, the top results would link the Google searchers to two property auction notices for the recovery of social security debts that he had owed 16 years earlier and Google should either delete or conceal the links to those pages.[14] The judgment has a significant impact on the operation of the Internet in general and Google's policies and services in particular. Since Google has become synonymous with the Internet, the judgement is being viewed as having larger ramifications for a broad range of Internet operators,

12. Nicholas Watt and Mark Sweney, "Terrorists and Criminals are Exploiting 'Right to be Forgotten'," *The Guardian*, November 11, 2014, http://www.theguardian.com/technology/2014/nov/11/sajid-javid-terrorists-criminals-right-to-be-forgotten. Accessed on October 20, 2016.
13. Justin McCurry, "Japan Recognises 'Right to be Forgotten' of Man Convicted of Child Sex Offences," *The Guardian*, March 1, 2016, http://www.theguardian.com/technology/2016/mar/01/japan-recognises-right-to-be-forgotten-of-man-convicted-of-child-sex-offences. Accessed on October 20, 2016.
14. EUR-Lex Access to European Union Law, Judgment of the Court (Grand Chamber), 13 May 2014. Google Spain SL and Google Inc. v Agencia Española de Protección de Datos (AEPD) and Mario Costeja González, http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A62012CJ013. Accessed on October 20, 2016.

as far as apportioning of responsibilities and imposing of obligations for breaches of privacy are concerned. Indeed, in this case, anyone searching Mr. Costeja's name online was promptly directed to one very unpleasant incident of his life, and that was the sum total of his Internet presence. His other personal characteristics or achievements were overlooked, and he was personally and professionally measured up solely on the basis of one unpleasant incident. In a broader sense, it implies that the most popular search engine, Google, is required to delete "inadequate, irrelevant or no longer relevant" data from its results whenever a member of the public requests it.[15]

In the midst of the debate over an individual's right to be forgotten, there is the question of determining the nature and extent of information that has been sought to be erased. Does the society have a right to know about the ignominious past of individuals, who committed horrific acts against the innocent and helpless? For example, if a paedophile is convicted to serve a prison sentence, why should this information not be made available to his neighbours? After all, after serving his prison term, he would be back within the folds of society, and may again indulge in his predatory behaviour directed against innocent victims. Is there an ethical and moral yardstick by which we can measure the veracity and propriety of the request made for delisting or deletion of information, videos or photographs from a publicly distributed database? Would it not amount to a form of censorship, more repressive rather than preventive, in the context of the "right to information"? There are differing views on the appropriateness of such a provision. Whereas Europe's data protection laws are intended to prevent the indiscriminate release of potentially damaging, private information about individuals, the US First Amendment guarantees the right to free speech and the right to know.[16]

Some researchers feel that "the right to be forgotten" and the "right to the right to know (plus freedom of speech, freedom of

15. Roy Greenslade, "Does 'the Right to be Forgotten' Ruling Threaten Our Right to Know?" *The Guardian*, September 19, 2016, http://www.theguardian.com/media/greenslade/2016/sep/19/does-the-right-to-be-forgotten-ruling-threaten-our-right-to-know. Accessed on October 20, 2016.
16. Euro Science Open Forum Manchester 2016, "The Right to be Forgotten Versus the Right to Know ", http://www.esof.eu/the-programme/event-information/right-to-be-forgotten.html. Accessed on October 20, 2016.

information)" are at a crossroads and may result in the violation of one while ensuring compliance with the other. Historically, the right to free speech and right to privacy have come into conflict with one another and differing discourses have been used to assert the righteousness of one over the other. In situations, when reconciliation becomes difficult due to arguments—though contradictory but based on accepted interpretations of these rights—a balance needs to be struck by reasoning on a case to case basis. The judgment of the Court of Justice of the European Union (CJEU) in the Google Inc. v/s Mario Costeja Gonza´lez is not without its share of ambiguity and controversy. The main being the issue of validity and enforceability of the legal ruling in the context of the borderless Internet. Since a meaningful global jurisprudence, capable of underpinning laws and regulations governing the Internet is yet to emerge, regulatory jurisdiction and willing abidance to the rulings are mismatched. For some time, Google's compliance with the ruling of CJEU was limited to removal of links accessible to those searching a European Union (EU) domain (google.co.uk, google.de, google.fr, etc.) but could be found by switching to google.com. The French authorities accused Google of circumventing the judgement of *CJEU by interpreting that the judgment's jurisdiction extends to Europe only and thereby making it too easy to evade.* The French authorities initiated legal action against Google and insisted that the enforcement of the court's wishes needs to be done worldwide. Google, on its part, argued that people who are not EU citizens, under the "right to information", cannot be deprived of their rights of accessing such information. In order to diffuse the standoff, Google began blocking search results across all of its domains when a search takes place within Europe.

A blog post, hosted by Peter Fleischer, chief privacy counsel of Google, notes that the right to be forgotten can be viewed from three different perspectives. The first category seeks to answer the least controversial query: "If I post something online, should I have the right to delete it?"[17] Since most of the social networking sites allow this, the enforceability of such a right is largely symbolic. However, does removal of a post from public display entail deletion from

17. Peter Fleischer, "Foggy Thinking about the Right to Oblivion", March 9, 2011, http://peterfleischer.blogspot.in/2011/03/foggy-thinking-about-right-to-oblivion.html. Accessed October 20, 2016.

the archives of such sites? In Fleischer's second category, the issue becomes more complex: "If I post something, and others copy it and re-post it on their own sites, do I have the right to delete it?" For example, someone posts a picture of himself online and later finding it to be despairingly inappropriate, wants to delete it from the site, but lo and behold, finds that several of his friends have copied and reposted that picture on their own sites. When those friends are asked to take down the picture, some of the friends refuse to do so and some cannot be contacted. Now, based solely on his request, is the site legally obligated to delete the picture from his friends' albums without their consent? Finally, there is Fleischer's third category of takedown requests: "If someone else posts something about me, do I have a right to delete it?" This, of course, brings into conflict the issue of freedom of expression and that of privacy. In case the posts put up by mainstream media outlets are demanded for deletion, does it not amount to censorship of the media which has an undeniable and legitimate right to disseminate truthful information of even disagreeable and embarrassing nature, as long as the information is legally acquired.[18]

In a ruling in December 2008, the CJEU, passed a judgement in an attempt to balance the two "fundamental rights" i.e. the "right of individuals with freedom of [expression]" and the "right to receive and impart information and right to privacy" with respect to the processing of personal data. The CJEU said that for reconciliation of those two "fundamental rights", "member states are to provide for a number of derogations or limitations in relation to the protection of data and fundamental right to privacy made solely for journalistic purposes or the purpose of artistic or literary expression, which fall within the scope of the fundamental right to freedom of expression".[19] This provision puts the responsibility on the social media sites to prove that the request made for deletion of material posted on their sites can't be complied with, as it has a legitimate journalistic

18. Jeffrey Rosen, "The Right to be Forgotten," *Stanford Law Review*, February 13, 2012, at https://www.stanfordlawreview.org/online/privacy-paradox-the-right-to-be-forgotten/. Accessed October 20, 2016.
19. EUR-Lex Access to European Union Law, Judgment of the Court (Grand Chamber) of December 16, 2008, http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A62007CJ0073. Accessed on October 20, 2016.

(or literary or artistic) purpose. If a supposedly aggrieved person contacts Facebook for removal of his embarrassing picture, the onus is on Facebook to decide if the picture has any journalistic (or literary or artistic) value before complying with the request. At the very least, Facebook now has to engage in this exercise which previously was performed by the courts. Some of the social networking sites have added the option of deletion of the posted contents on their sites, depending upon the selections made by the user. For example, the photo messaging application Snapchat automatically deletes the content of Snaps (the photo and video messages sent using Snapchat) from its servers after a Snap has been opened by all the recipients or has crossed the set or expired time limit. Similarly, the software X-Pire,[20] developed by a group of German researchers, can shrink the digital footprint by adding an encrypted timer on pictures posted online on Facebook and stops displaying the picture after expiration of the predetermined time duration.[21]

More and more people, encouraged by the court ruling of May 2014 in the Google Spain v/s Mario Costeja González case, are requesting Google for taking down or delinking certain results about themselves. According to Google's Transparency Report, as on October 19, 2016, Google had received 570,511 requests for the removal of URLs. The report further states that it has already evaluated 1,733,639 URLs since May 2014. The report shows that Google has removed 43.2 percent of the URLs from the requests received. However, Google has been accused of not being transparent enough in how it is responding to requests for delisting. From the transparency report of Google, it is not clear what sort of information gets delisted and what sort typically does not, in what proportions, and in which countries? Some experts have urged Google to come up with details of the guidelines it follows in striking a balance between individual privacy and freedom of expression interests. Since Google has not involved any public representative in the decision-making process, the process

20. iTunes Reviews, "Xpire - Mass Delete and Manage Old Social Posts", https://itunes.apple.com/us/app/xpire-mass-delete-manage-old/id782634899?mt=8. Accessed on October 20, 2016.
21. Ted Claypoole & Theresa Payton, *Protecting Your Internet Identity: Are You Naked* (Plymouth: Rowman & Littlefield, 2012), p. 89.

of delisting relies solely on the search engines' interpretation of the judgement of the CJEU.

THE RIGHT TO BE FORGOTTEN VS. THE RIGHT TO PRIVACY

Some scholars have tried to categorise the right to be forgotten as a privacy right. The concept of privacy is far more complex, more pervasive and more nuanced than can be encapsulated and explained by a single underlying concept. Privacy is a legitimate expectation, an inalienable right and an indispensable precondition for an inclusive society that ensures human dignity to each and every person. A person's fundamental need for privacy is a psychological as well as sociological manifestation of the sense of being human with dignity. However, there are some distinctive differences between the two rights. The right to privacy constitutes information that is not publicly disclosed. The right tries to protect individuals from unsanctioned, unsolicited and possibly unwanted invasion of their privacy without their consent by the government, corporations or other individuals. It also includes information that is not in the public domain, has not been disclosed voluntarily, and whose unsolicited revelation and dissemination can cause psychological, sociological or physiological problems. On the other hand, the right to be forgotten applies to information that was publicly known at least to some degree at a certain time.

The right to privacy is not explicitly mentioned in the Indian Constitution but has been recognised and accepted as being an inalienable part of our constitutional heritage and as a natural individual right under Article 21 under the "right to life". As per Article 21 of the Indian Constitution: "No person shall be deprived of his life or personal liberty except according to procedure established by law."[22] In some of the landmark rulings, the Indian courts have vindicated the explicit constitutional human "right to life" and broadened its scope to include the implicit "right to privacy" within Article 21.

The Delhi High Court is currently hearing a case pertaining to the "right to be forgotten", in which the petitioner is seeking

22. Gaurav Goyal and Ravinder Kumar, *The Right to Privacy in India: Concept and Evolution* (New Delhi: Partridge, 2016), p.2.

delinking of himself from a court judgement in a criminal case, which involved his wife and mother, and in which he was not a party. The IKanoon Software Development Private has lawfully republished the aforesaid court judgement on its website and the petitioner, a Non-Resident Indian (NRI), has sought relief, saying that an online search of his name directs the searcher to the judgment, leading to the impression that he was involved in it. In May 2016, the Hon'ble High Court sought the responses of the Ministry of Communication and Information Technology (MOC& IT) and Google Inc. whether the right to privacy includes the right to delink irrelevant information from the Internet.[23]

The cyber jurisprudence in the Indian framework, which is largely founded upon the "Information Technology Act, 2000", does not cover the "right to be forgotten". Rule 2(i) of the Information Rules, 2011, formed under section 43A of the Information Technology Act, 2000, defines personal information as "information that relates to a natural person which either directly or indirectly, in combination with other information available or likely to be available with a corporate body, is capable of identifying such person."[24] Similarly, Rule 3 of the IT Rules, 2011, states that due diligence has to be exercised by intermediaries to make sure, among other things, that the data does not invade another's privacy. The right to be forgotten is *not* explicitly mentioned in the legislative provisions of the Information Technology Act, 2000.[25]

In another development, on September 19, 2016, on the application and arguments of the Internet Freedom Foundation (IFF)—a group with voluntary membership for an open Internet—the Delhi High Court had given consent for a legal intervention to determine whether India needs a "right to be forgotten" law. The intervention will be heard after the IFF files its pleadings with the court and its next hearing is scheduled for February 2, 2017.[26]

23. "Does Right to Privacy Include Right to be Forgotten? Delhi HC asks Google", *Press Trust of India*, *India Today*, May 2, 2016.
24. Harish Chander, *Cyber Laws and IT Protection* (New Delhi: PHI Learning, 2012), p.217.
25. Ibid.
26. Salman SH, "Delhi HC Accepts Intervention Against a Right to be Forgotten Case in India", http://www.medianama.com/2016/09/223-delhi-hc-right-to-be-forgotten/. Accessed on October 20, 2016.

RIGHT TO BE FORGOTTEN IN THE LIGHT OF REPENTANCE, REFORMATION OR CHANGE OF MIND

In any civil society, acts of repentance over transgressions committed in the past due to wilful rebellion, negligence or ignorance are encouraged, celebrated and applauded. Similarly, people have a right to move on in life without being shackled to the guilt and memories of their past. This digital age has given spontaneity to our power of expression. Our ephemeral emotions or vacillating opinions, which may or may not confirm to moral rules or comply with ethical standards, are expressed in the form of a comment, picture, video or other material posted on social media. Besides, our attitudes—towards the propriety, morality and legitimacy of an act—are overshowed by the novelty, underlying humour or sensational value of the act. As adults, we may want to rid ourselves of the traces of our past online activities (as teenagers) as these now appear immature, irresponsible, incorrect or improper. But in the unforgiving digital realm, one can't seek forgiveness and repent for past transgressions or stupidities; here, one is stigmatised for life and forced to carry the guilt of being indiscreet. Our pasts are becoming etched like a tattoo into our digital skins.[27]

CONCLUSION

Forgetting plays an essential and adaptive role in accelerating and sustaining our growth trajectory. Being cognisant of the past, but without being shackled by past indiscretions, ensures that we move on in life, without staying stuck in the quagmire of guilt and shame of past decisions. Forgetting is a biological function and has played an important role in human ontological development and evolution. By being perpetually tethered to the past and fettered by previous misdeeds, we cannot grow to our full potential and achieve professional and personal milestones in our lives. In a fictional short story, written by Argentine author Jorge Luis Borges, a boy by the name of Ireneo Funes suffered the curse of remembering everything.

27. Sam Grey, "Tattoos on Our Digital Skin: Anonymity, Privacy, and Accountability in Cyberspace" , *Canadian Undergraduate Philosophy Journal*, 2005, https://works.bepress.com/samgrey/10/. Accessed on October 16, 2016.

For Funes, the present was meaningless as it was deluged by his memories of the past. While reflecting on the lessons that can be derived from the story of Funes, one author said that: "Borges suggests that forgetting—that is, forgetting ceaselessly—is essential and necessary for thought and language and literature, for simply being a human being."[28] The perpetual dialectic between remembering and forgetting has manifested itself in cyber space, providing various narratives of the "right to be forgotten", 'right to privacy' and 'right of freedom of expression'. Despite the centrality of forgetting for human existence in modern times, the digital age has eschewed this notion in favour of giving to eternity what needs to be wiped clean from our perceptual and cognitive channels. In many countries, jurisprudence is emerging to protect people from the corrosive influences of past indiscretions and from the mistakes or crimes of the past for which individuals have genuinely repented, so that they move on with their lives.

28. Aleksandar Hemon, "Alexsander Hemon on Jorge Luis Borges's 'Funes the Memorious", *Daily Beast*, September 26, 2012, http://www.thedailybeast.com/articles/2012/09/26/aleksandar-hemon-on-jorgeluis-borges-s-funes-the-memorious.html. Accessed on October 19, 2016.

THE REINVENTION OF LIGHTER-THAN-AIR FLYING MACHINES

VIVEK KAPUR

Man first took to the air, as per early accounts, by the use of large kites able to carry a man aloft.[1] Hot air balloons were the next means of gaining access to the air. As has been the trend, the first applications of these two means of rising into the air were for military purposes.[2] A man carried aloft could see further than personnel on the ground and so served as an eye in the sky to spy on opposing military forces through the larger line of sight obtained from a higher location. The advent of heavier-than-air flight brought the promise of freedom from lifting gas and the possibility of much higher speeds than had been possible with lighter-than-air flight technology. This new heavier-than-air flight technology resulted in the balloon and dirigible being consigned to the dustbin of aviation history as obsolete. Heavier-than-air flying machines offered much higher speeds and manoeuvrability than both balloons and dirigibles.[3] Of late, however, there has been a

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1. M. Robinson, "Kites on the Winds of War", http://kitehistory.com/Miscellaneous/Warkites.html. Accessed on August 22, 2016.
2. Airships.net, "Airships.net: A Dirigible and Zeppelin History Site", AIRSHIPS.NET http://www.airships.net/dirigible. Accessed on August 23, 2016.
3. "Military Use of Balloons in the Mid- and Late Nineteenth Century", http://www.centennialofflight.net/essay/Lighter_than_air/military_balloons_in_Europe/LTA4.htm. US Centinnial of Flight Commission. Accessed on August 23, 2016.

resurgence of interest in lighter-than-air flying technologies for some very practical operational reasons.

BACKGROUND

Hot air balloons, as documented in Western literature and history, were invented and came into use in the late 18th century through the efforts of the Montgolfier brothers.[4] Hot air balloons had a relatively limited payload capability, and needed to carry a supply of fuel and a suitable burner to generate hot air also. Hence, other means of keeping balloons aloft were explored and the use of the comparatively readily available lighter-than-air hydrogen gas was widely adopted.[5] Hydrogen gas was used in larger balloons, which were soft structures and owed their shape to inflation pressure on the gas carrying impervious bags. Further developments led to the development of dirigibles. A dirigible comprised a rigid structure for maintaining its shape and it also incorporated several impermeable gas bags whose lifting power served to carry the entire structure aloft.[6] The main difference between balloons, blimps, and dirigibles was that in the case of balloons and blimps, without the filling of buoyancy providing gas, these were shapeless limp puddles of gas impermeable material. In the case of the dirigible, even in the absence of the gas, the structure retained its shape due to its integral shape giving frame. The shape of most dirigibles was somewhat streamlined to resemble a teardrop for lowered air resistance in motion.[7] The rear of most dirigibles incorporated integral fin-shaped protrusions for direction maintenance and weather cocking to point the forward end into the resultant airflow.[8]

Balloons, whether hot air or hydrogen filled, usually carried a basket or small gondola slung under them for carriage of personnel or other payload. Dirigibles also incorporated a gondola on the lower surface of the aerodynamically shaped main structure for carriage of cargo and / or personnel. These balloons and blimps were dependent upon the

4. Mary Bellis, "The Early History of Flight", August 14, 2016, About.com, http://inventors.about.com/library/inventors/blearlyflight.htm. Accessed on August 27, 2016.
5. n. 2.
6. Ibid.
7. Bellis, n. 4.
8. Ibid.

prevailing wind patterns for movement, and usually did not possess any motive power of their own to move in a desired direction independent of the prevailing winds. Dirigibles, on the other hand, had engines mounted on their structure to give an integral means of propelling the machine in the desired direction. At the time, these were usually aviation certified piston engines driving propellers, mounted on stub protrusions, or pylons, fixed on the dirigible. This allowed the dirigibles to move under human control in a desired direction, making them practically more usable than hot air balloons.[9] The solutions to effective steering of dirigibles owed a considerable amount to the Brazilian Alberto Santos Dumont who, while studying in Paris, devoted his attention to solving problems with the control and guidance of dirigibles before moving on to developing his Bis series of heavier-than-air flying machines.[10]

Germany, in particular, took to using dirigibles in a big way. The Zeppelin dirigibles became famous as the largest flying machines then available to man. Germany utilised dirigibles for a few bombing missions during World War I.[11] Civil uses of dirigibles also gained ground in the early 20th century. The large internal volume of the payload gondola fitted to large commercial dirigibles allowed luxurious cabins to be built for passenger transport while also carrying cargo. At the departure and destination locations, commercial dirigibles were usually brought down to a few tens of feet from the ground, and one end – usually the nose end – was tethered to a suitable mast while taking on and disembarking passengers and cargo.[12] One of the most famous such luxury dirigibles of the early 20th century was the Hindenburg.[13] A horrendous accident that involved the hydrogen gas, used for buoyancy, catching fire and destroying the Hindenburg, while it was tethered to its mast at New York, USA, helped ease out dirigibles from use in favour of the then new heavier-than-air flying machines.[14]

9. Ibid.
10. "Santos-Dumont Story", *Lighter than air.net,* http://www.lighterthanair.net/Santos.htm. Accessed on August 23, 2016.
11. n. 2.
12. Ibid.
13. Ibid.
14. Christopher Klein, "The Hindenburg Disaster: 9 Surprising Facts", *History.com*, May 4, 2012, http://www.history.com/news/the-hindenburg-disaster-9-surprising-facts. Accessed on August 24, 2016.

Since then, the 20th century saw the science of aviation moving towards ever faster, larger, and heavier-than-air flying machines. These were initially made with light wood and fabric while being propelled by piston engines driving an/multiple airscrew. Over time, newly developed light metal alloys came to be the preferred materials, while jet engines, turbojets and turbofans replaced the earlier piston engines. The few balloons that survived into the later 20th century and the early 21st century were used for hobby hot air balloon activities. Lighter-than-air flight was seen as having no commercial or military application apart from hobby ballooning and use of a few unmanned small balloons by meteorologists to plot upper air wind patterns. Aviation was seen heading towards ever higher altitudes and faster speeds from the early tens of kilometres per hour (kmph) to high subsonic, supersonic and towards hypersonic speeds, with access to near space over time. Lighter-than-air flight, apart from hobby ballooning, was merely an interesting footnote in the history of human flight.

Heavier-than-air aviation has always had a few limitations. Heavier-than-air aircraft have limited persistence due to the high fuel consumption of jet engines and limited space to carry Aviation Turbine Fuel (ATF) on board. The need to keep air resistance or drag at a minimum puts constraints on the size and shape of the payload carried by the aircraft. Moreover, the aircraft operate at high altitudes up to the high troposphere in only a few cases. Very few heavier-than-air aircraft are able to operate in the stratosphere. Operation in the troposphere, where almost all heavier-than-air aircraft operate, places heavier-than-air aircraft within the kill envelope of hostile Surface-to-Air Missiles (SAMs) and hostile fighters. These limitations, combined with new concepts of operation, led to a relook at lighter-than-air vehicles as a possible solution. As has happened so often in human history, military needs and applications took the lead.

During the later years of World War II, experiments had been conducted with carrying radars aloft. Small radars were installed on a few fighter and interceptor aircraft. These radars were optimised to detect opposing aircraft and to assist in more accurate attacks on hostile targets. A need was also felt for carrying larger radars into the air to carry out surveillance and long range detection functions. The UK fielded the Shackleton bombers modified to carry a radar aloft in an unwieldy

capsule shaped radome under the fuselage.[15] This aircraft mounted radar was initially meant to detect German submarines by the radar detecting their periscope masts, but, in later years, the aircraft served in the Airborne Early Warning (AEW) role as well. The radar equipped Shakleton finally retired from service in the early 1990s.[16] The possibility of larger radars on aircraft overcoming the limited radar horizon problems of ground-based early warning and surveillance radars by virtue of the elevated location on the aircraft became clear very soon. The first such US installation involved fitting a radar in a ventral pod on a TBM Avenger torpedo bomber of the US Navy (USN).[17] This was followed by the EC-121 Airborne Early Warning and Control (AEW&C) aircraft which involved a large surveillance radar mounted in two large pods on the top of, and below, the fuselage of a modified Super Constellation airliner.[18] As aircraft became more capable, the current US state-of-the-art E-2 "Hawkeye" AEW&C[19] for use on US aircraft carriers and the E-3 "Sentry" Airborne Warning and Control System (AWACS)[20] for the US Air Force (USAF) entered service. These two aircraft have undergone several stages of upgradation to stay in frontline service till date.[21] Despite their much more advanced technology, the time on station of the E-2 and E-3 and endurance still could be counted only in a few hours at most.

DEVELOPMENT OF AIRSHIPS

The real world requirement for long time surveillance cover led to the resurrection of the lighter-than-air craft in a tethered form. The

15. "Military Aircraft: British Avro Shackleton", *Craig lotter.co.za*, May 2, 2015, http://www.craiglotter.co.za/2015/05/02/military-aircraft-british-avro-shackleton/. Accessed on August 24, 2016.
16. 8squadron.co.uk, "Airborne Early Warning: The Shackleton Years 1972-1991", 8 Squadron.co.uk http://8squadron.co.uk/history_1972-1991.php. Accessed on August 24, 2016.
17. Leo Pettipas, "AVENGER - GUPPY TBM-3W2", *Associate Air Force Historian.ca* http://jproc.ca/rrp/rrp3/avenger_guppy_3w2.html. Accessed on August 24, 2016.
18. Fas.org, "EC-121 Warning Star", fas.org http://fas.org/man/dod-101/sys/ac/ec-121.htm. Accessed on August 24, 2016.
19. Fas.org, "E-2C Hawkeye", Fas.org. http://fas.org/man/dod-101/sys/ac/e-2.htm. Accessed on August 24, 2016.
20. "E-3 AWACS (Sentry) Airborne Warning and Control System, United States of America", *airforce-technology.com* http://www.airforce-technology.com/projects/e3awacs/. Accessed on August 24, 2016.
21. Ibid.

aerostat comprises a streamlined helium[22] filled lifting body with fins for directional stability.[23] Attached to the lifting body is a structure for the radar antenna and associated equipment, or other sensors/ transponders as per operational requirements of the specific application. Antennae for ancillary tasks such as Identification Friend or Foe (IFF), etc. are distributed all over the structure.[24] A tethering cable that keeps the aerostat fixed at a chosen location holds the aerostat in place and power cables from the ground-based electricity generator sets and data cables carrying data from the radar antenna to the ground station run within the tethering cable.[25] An aerostat can stay aloft for several days at a stretch. A typical operational altitude for such an aerostat is about 15,000 ft Above Mean Sea Level (AMSL).[26] Thus, aerostats provided persistence incomparably greater than that of AEW&C and AWACS.[27] Aerostats, however, have the disadvantage of being static and limited to one area of operation, unlike AWACS and AEW&C.[28] The lower cost and almost similar effectiveness of aerostats resulted in their induction in several military forces in the world.[29]

Aerostats carrying radars to supplement AWACS and AEW&C apart, there have been other taskings for these tethered craft. The US developed the Joint Land Attack Cruise Missile Defence Elevated Netted Sensor System (JLENS) to counter the new low flying low Radar Cross Section (RCS) cruise missile threat.[30] JLENS incorporates tethered lighter-than-air craft, or aerostats, carry a host of sensors optimised to detect low RCS, low flying cruise missiles and to pass on detection and tracking data quickly to networked weapon systems to enable these cruise missiles to be destroyed.[31] JLENS comprises two

22. Helium came into widespread use to remove the danger of fire and explosion involved with use of the highly inflammable hydrogen gas as a lifting gas. The problem with helium, however, is its availability in the required quantities.
23. Fas.org, "Tethered Aerostat Radar System", fas.org http://fas.org/nuke/guide/usa/airdef/tars.htm. Accessed on August 24, 2016.
24. Ibid.
25. Ibid.
26. Ibid.
27. Ibid.
28. Ibid.
29. Ibid.
30. "JLENS", *Raytheon.com,* http://www.raytheon.com/capabilities/products/jlens/. Accessed on August 23, 2016.
31. Ibid.

aerostats flying at 10,000ft AMSL.[32] Each has 360 degrees in azimuth detection capability out to 340 miles. Each can stay airborne for up to 30 days at a time.[33] One JLENS location, called an orbit, is claimed to provide the same 24/7 coverage for 30 days as is possible with 4 to 5 fixed wing surveillance aircraft such as AWACS, E-2C, etc.[34] It is also claimed that the JLENS needs 50 percent of the manpower required by fixed wing aircraft and that the fixed wing aircraft are 500 to 700 per cent more expensive to operate.[35]

It was also realised that free flight dirigibles optimised for very high altitude operation could potentially deliver benefits akin to those obtained from Low Earth Orbit (LEO) satellites.[36] Since the second half of the 20th century, most governments, economies, and military forces have come to rely upon space satellite-based applications ranging from voice and data communication, surveillance, and navigation, to name just a few.[37] The disruption of any of these applications could have catastrophic effects on the country that loses access to essential space-based applications. In the modern era, several nations have developed and tested the capability to degrade, disable, and destroy satellites.[38] The ability to quickly replace destroyed satellites is desirable. However, the time taken to build and launch satellites and launch rockets can stretch from a few days to several weeks or even months, despite efforts to expedite the process. There are heavy costs involved in prefabricating satellites and their launchers and keeping them in reserve. Even if this is done, launching would still involve time delays in preparing the launcher through moving it to a launch pad, fuelling, etc.[39]

32. Ibid.
33. Ibid.
34. Ibid.
35. Ibid.
36. Wen-Qin Wang, "Near-Space Remote Sensing", *archive.org*, http://archive.org/stream/Wen-Qin_Wang_Near-Space_Remote_Sensing/Wen-Qin_Wang_Near-Space_Remote_Sensing_djvu.txt. Accessed on August 24, 2016.
37. Matthew Hoey, "Military Space Systems: The Road Ahead", *thespacereview.com* February 27, 2006, http://www.thespacereview.com/article/563/1. Accessed on August 24, 2016.
38. "Space Defence", *fas.org*, http://fas.org/spp/military/program/asat/overview.htm. Accessed on August 24, 2016.
39. "NASA News: National Aeronautics and Space Administration, John F. Kennedy Space Center", *nbbd.com*, http://www.nbbd.com/events/nasa.html. Accessed on August 24, 2016.

It came to be realised that very high altitude free flight dirigibles, if equipped with the same payloads as carried by satellites, could provide the applications earlier obtained through the use of satellites. In earth observation tasks, the fact that such free flight dirigibles would operate at close to one-tenth the altitude of satellites, could result in much better resolution, along with persistent surveillance and, hence, better intelligence gathering. The same principles could be applied to High Altitude Long Endurance (HALE) Remotely Piloted Aircraft (RPA). Here the relatively very small size of the RPA, along with their limitation of the need to carry a high fraction of operating weight in terms of fuel tilts the cost benefit ratio in favour of very high altitude dirigibles. Countries that desire to develop and obtain advanced aerospace capabilities are already experimenting with these newly re-discovered old technologies. The US has the High Altitude Airship (HAA) development project.[40]

China is developing its own very high altitude airship called Yuanmeng, for national security tasks.[41] The Yuanmeng is unique in that it uses helium to attain its operational altitude, and when at a height, utilises solar cells integrated into its upper surface to operate the engines needed to help it maintain its specified station and to power onboard electronics. Thus, through utilisation of integrated solar panels, it should be able to reduce its conventional fuel load and increase its mission payload.[42] The Yuanmeng is said to be equipped with several communications and surveillance payloads. It has a volume of 18,000 cubic metres.[43] The Yuanmeng, in operational use, could be utilised to supplement satellite systems, while also supplementing Chinese national sensors carrying out tasks such as Carrier Battle Group (CBG) detection and tracking. In fact, craft such as the Yuanmeng have military and other national security applications that are limited only by the imagination.

40. Michael Lee et al, "High-Altitude LTA Airship Efforts at the U.S. Army SMDC/ ARSTRAT", *American Institute of Aeronautics and Astronautics.org*, http://arc.aiaa.org/ doi/abs/10.2514/6.2009-2852. Accessed on august 24, 2016.
41. Kyle Mizokami, "China's New Spy Airship Hunts Aircraft Carriers From the Edge of Space", popularmechanics.com, http://www.popularmechanics.com/military/ weapons/a17858/chinas-new-spy-airship-cruises-near-space/. Accessed on August 24, 2016.
42. Ibid.
43. n. 39.

The world's largest flying craft, the Airlander 10 airship, was recently unveiled when it was moved out of its hangar by Hybrid Air Vehicles (HAV) earlier this year.[44] The Airlander 10 was initially designed to meet the US Army's long endurance multi-intelligence vehicle programme.[45] The Airlander was planned to remain airborne for up to 21 days at a time while carrying 1,136 kg of operational payload comprising communications and sensor equipment.[46] Delays in the project and reduced funding killed the US Army programme. However, HAV, the original designers, have resurrected the Airlander 10 with a payload of 20,000 lb or 9,090 kg and an 'at a time' airborne time of five days, in place of the earlier 21days.[47] HAV hopes to utilise the craft for commercial purposes such as passenger and cargo transportation. The Airlander 10 is 92 m long. It has four diesel driven engines to operate its propellers. The Airlander's engines can enable the craft to move at speeds ranging between 100 and 200 kmph. The most obvious advantage of the concept is the ability to land at remote locations without the use of runways as required by conventional aircraft. The craft, despite relying upon helium for lift, is aerodynamically shaped, and aerodynamic lift contributes 60 percent of the final lifting power achieved. The remaining 40 percent is derived from the helium bags in the structure. The Airlander 10, thus is not a true airship but a hybrid that combines conventional helium lift with aerodynamic lift and, thus, accrues the benefits of both technologies to achieve the desired performance. Helium lift can be regulated to help in altitude control and take-off and landing.[48]

The Airlander 10 carried out its first 100 minute test flight close to Carrington outside London on August 17, 2016.[49] The second test flight of similar duration was held on August 24, 2016. At the end of the second test flight, while landing, the Airlander experienced a

44. Vlad Savov, "Airlander 10: Up Close with the Gigantic Airship the US Army Wanted", *The Verge*, July 8, 2014, http://www.theverge.com/2014/7/8/5880061/airlander-10-photo-essay. Accessed on August 27, 2016.
45. Ibid.
46. Ibid.
47. Ibid.
48. Ibid.
49. Jill Lawless, "Giant Helium-Filled Airship Airlander Takes off for First Time", *phys.org*, August 17, 2016, http://phys.org/news/2016-08-giant-helium-filled-airship-airlander.html. Accessed on August 27, 2016.

nose down pitching movement which resulted in some damage to the front end of the flight deck and forward structure of the craft, the extent of which is yet to be reported.[50]

There are reports of Russian progress in development of cutting edge dirigibles also. TheAu-30, created by Augur RosAeroSystems', is claimed to be a multifunctional 10-seat airship. The company claims that the Au-30 has already been flight tested. The same company is said to be developing a medium altitude unmanned airship called the Sokol, the high altitude unmanned Berkut satellite airship and hybrid cargo-and-passenger ATLANT airship.[51]

CONCLUSION

There is renewed interest in lighter-than-air and hybrid lighter-than-air vehicles. Hybrid lighter-than-air craft combine lighter-than-air lifting concepts with aerodynamic lift technology. The utilisation of modern materials and technologies in purely conventional as well as in hybrid airships is being attempted in order to overcome the limitations of heavier-than-air aircraft. Almost all technologically dominant nations are pursuing research in this field. This is especially so as lighter-than-air craft can be utilised for a multitude of tasks. Several tasks that hybrid craft such as the Airlander 10 and Yuanmeng can carry out would otherwise require application of space technology such as satellites or very expensive and complicated heavy lift helicopters to achieve. The writing on the wall appears to point towards a new lease of life for lighter-than-air aviation, either in isolation or in combination with the aerodynamic aspects of heavier-than-air flight technology.

50. "World's Biggest Aircraft, Airlander 10, Crash Lands on Second Test Flight", *The National*, August 24, 2016, http://www.thenational.ae/business/aviation/worlds-biggest- aircraft-airlander-10-crash-lands-on-second-test-flight. Accessed on August 28, 2016.
51. Ibid.

PROHIBITION OF NUCLEAR WEAPONS: TURNING BACK THE CLOCK?

JAI RAINA

A proposed conference in 2017 has the potential to be a watershed moment in the history of nuclear disarmament. We could be at the cusp of one of the more profound moments of the nuclear era. It all began in December 2016 when a large number of nations voted resoundingly in favour of opening a dialogue on a treaty banning nuclear weapons under UN Resolution L.41. In recent times, this is possibly one of the most significant developments in the actual prohibition of nuclear weapons. The treaty to be discussed as a result of the resolution, will be more expansive than any before it. Looking at a roadmap of how L.41 came to be, will allow us to glean what such a treaty may look like. As this paper explores, there is, at times, a disconnect between the discourse on prohibition and its practice. The paper explores this phenomenon with an analysis of the vote on L.41. Analysing the vote also allows us the opportunity to divine how the upcoming conference on the treaty may play out. Certainly, the common narrative has fast become one of euphoria and optimism towards the proposed conference and the treaty that the conference hopes to pass. The paper culminates with a prediction of how feasible such an ambitious treaty truly is.

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Since 1947, the academic journal, *The Bulletin of the Atomic Scientists* has maintained a very special clock. This timepiece has no casing or movement so to speak, it's merely a clock face whose hands are adjusted manually by members of the *Bulletin's* board. Called the Doomsday Clock, it was created to be a symbolic depiction of how close mankind was to a nuclear Armageddon. Armagedon or doomsday was depicted as midnight on the clock (with both hands at 12.00). In 1947, the clock face showed seven minutes to midnight; two years later, when the Soviets tested their first nuclear device, it jumped to three minutes to midnight; and another two years later, when America tested the first hydrogen bomb, the clock was pushed a minute short of midnight.

Throughout the Cold War and beyond, the hands of the clock have danced back and forth, reflecting the imminence of the threat of nuclear war. The latest adjustment to the clock shows it at just three minutes to midnight.[1] While the clock is more symbolic than scientific, it is reflective of a strong anti-nuclear weapons view that has existed since the debut of nuclear weapons on the world stage. However, on the whole, despite condemnation of nuclear weapons from all quarters, they continue to exist. While there has been a trend towards limiting a net increase in nuclear weapons, as well as various kinds of weapon controls, many states have continued to modernise their arsenals, updating one of the 20th century's greatest threats for the next century.

It was a surprising development then, when earlier this year, the UN General Assembly voted largely in favour of a resolution to discuss the prohibition and abolishment of nuclear weapons. The decision has been met with a flurry of media coverage, with many going as far as to say that this may soon be remembered as a historic moment. This development is undoubtedly significant, but requires a more indepth analysis before it can be written up as an epochal moment. An analysis may also yield some predictions as to how next year's conference will play out. This paper seeks to provide a fuller

1. Though it's worth noting that of late the keepers of the clock also take into account things like environmental dangers and bio-terrorism, etc., however, nuclear war is still a primary concern. In a statement explaining their setting of the clock, the *Bulletin* spoke of "unchecked climate change, global nuclear weapons modernisations and outsized nuclear weapons arsenals". More information available at http://www.telegraph.co.uk/news/worldnews/northamerica/12121362/Doomsday-Clock-live-stream-When-will-the-world-end.html. Accessed on Decemebr 13, 2016.

view of the proposed conference, from its origins to a breakdown of how exactly the vote went and what that means. An attempt has been made to speculate on the efficacy on the proposed conference.

DECONSTRUCTING THE RESOLUTION

An analysis of Resolution L.41 (the recently passed resolution that calls for a conference in 2017) would be incomplete without talking about Resolution 70/33.[2] Resolution 70/33 was passed in the 70th session of the UN General Assembly (UNGA) in 2015 and pertained to "taking forward multilateral nuclear disarmament negotiations". As per this resolution, an Open Ended Working Group (OEWG) was set up. In the OEWG's final session, held in Geneva this August, 107 countries supported the idea of having a conference in 2017 to deliberate on a treaty aimed at the prohibition, and eventual elimination of, nuclear weapons.

An understanding of this report is essential as it gives an indication of the perspectives of the proponents of the treaty and the mould they would like to cast. The report has a fairly broad conception of what the ban treaty should look like. Clause 35 of the report lists the following as elements of the ban treaty:

- Prohibiting, acquiring, stockpiling, developing, and testing of nuclear weapons
- Prohibiting the use of nuclear weapons to the extent that planning for nuclear war, training personnel for nuclear war, and targeting nuclear weapons should be disallowed.
- Stringent prohibition on the presence of nuclear weapons within the national territory of signatories.
- Prohibitions on financing nuclear activities related to nuclear weapons.
- Prohibitions on the mere encouragement and inducement of any of the prohibited acts prohibited under the treaty.
- The treaty also proposes that assistance be provided to those that have suffered as a result of nuclear testing, as well the environment at large.[3]

2. Full text of Resolution 70/33, available at http://www.un.org/en/ga/search/view_doc.asp?symbol=A/RES/70/33. Accessed on December 13, 2016.
3. Full OEWG report accessible at: http://www.icanw.org/wp-content/uploads/2016/08/OEWG-report-final.pdf. Accessed on December 13, 2016.

While the stated aims of the proposed treaty are broad and ambitious, its proponents do not see it as a final destination. As laid down in Clause 36, it is "an interim or partial step toward nuclear disarmament as it would not include measures for elimination and would instead leave measures for the irreversible, verifiable and transparent destruction of nuclear weapons as a matter for future negotiations."[4] Clause 36 goes on to say how the makers of the treaty hope that it will become a tool for the stigmatisation of nuclear weapons.

While the general tone of the report is emphatic and stringent, it repeatedly reiterates that aspects such as those mentioned in Clause 35 are open to deliberation. Its wording gives the impression that its proponents would not be too amenable to significant dilution. This may be evidenced from the strict prohibitions laid down in Clause 35 and the wide vision set out in Clause 36, as well as from the stated aim of the treaty, is Clause 67. Clause 67 sees the aim of the treaty as an instrument to "…prohibit nuclear weapons, leading towards their total elimination."[5] Such a bold assertion undoubtedly had a role in attracting support for the proposal, as indeed much of the report reflects an anti-nuclear sentiment. The strong position the report (and by extension its supporters) take against nuclear weapons, sets the stage for a forum that inherently lacks the flexibility for negotiations and isn't going to be open to any sweeping changes to its essential holdings.

UNGA VOTE

The Working Group's proposal to begin deliberations in 2017 went to vote in the United Nations General Assembly in October of 2016. The General Assembly voted largely in favour of the proposal with 123 nations voting for, 38 voting against, and 16 abstentions. And thus, with relative ease, Resolution L.41 was passed by the General Assembly.

Looking at the voting result allows one to raise a few questions, namely: why has there been such overwhelming support for the ban, what are the justifications provided by those opposed/abstaining,

4. Full OEWG report, accessible at: http://www.icanw.org/wp-content/uploads/2016/08/OEWG-report-final.pdf. Accessed on December 13, 2016.
5. Ibid.

and what does a breakdown of those in favour and those opposed indicate for the upcoming deliberations? To answer these questions, we have looked at the official explanations that some countries have submitted along with their votes. These explanations are telling in more ways than one.

Coming first to the question of the staggering support that the L.41 received. We see that the reasons go beyond the usually expected ones. Of course, a great many of the votes in favour of L.41 are on matters of principle and an opposition to nuclear war itself. Such arguments have existed from the time the first atom bombs were dropped in 1945 and remain largely unchanged. Certainly in the 21st century, taking a stance that openly advocates nuclear weapons is an inadvisable one in international politics. The common narrative is definitively along the lines of the wrongness of nuclear weapons and the rightness of (eventual) disarmament. Even the hermit kingdom of North Korea, whose nuclear history is chequered to say the least, voted in favour of this resolution However, coupled with such ethical objections and principles, there also appears to be a sense of discontentment with the current state of discourse on nuclear proliferation , disarmanment and the instruments that seek to enforce the same. While this discontent is not a new phenomenon nor one that is particularly alarming, instances such as the vote on L.41 serve to remind us of its significant presence.

Such discontent can be evidenced in the written explanations. Sweden pointed out amongst other things that a "…frustration with this lack of progress is widespread…"[6] referring specifically to the "failure" of the nuclear Non-Proliferatio Treaty (NPT) in bringing about an end to nuclear weapons as well the inapplicability of the Comprehensive Test Ban Treaty (CTBT). Clearly, the disparity between nuclear weapon possessors and non-nuclear states was a major driving force behind many countries votes. The Islamic Republic of Iran pointed out in its explanation that it was partially motivated to vote yes as it finds itself under the "nuclear threat of the Israeli regime"[7] and that "the total elimination of nuclear

6. Full explanation of the Kingdom of Sweden, available at: http://reachingcriticalwill.org/images/documents/Disarmament-fora/1com/1com16/eov/L41_Sweden.pdf Accessed on December 13, 2016.
7. Ibid.

weapons is the only absolute guarantee against their threat or use".[8]

Moving to the opposition to L.41 and the justifications provided for it, we see that amongst those opposed, there is a fairly strong section that are allies of the United States. Before coming to those views, let's look at the United States' opposition to L.41. In its explanation, the US reiterates all the efforts that it undertaking with a view to limit its nuclear weapons. The US also expressed a cognisance of disappointment with the "pace of progress" that other nations expressed. However, despite these statements, the Americans' explanation makes clear that they do not support any sort of radical shift of the nature that the L.41 proposes. "… diverting focus from this proven course in favour a nuclear weapons ban would be both polarising and would forsake longstanding principles of credible nuclear disarmament, such as verifiability and is not the recipe for success when dealing with nuclear weapons"[9] states their explanation. The proven course, no doubt, refers to the NPT and CTBT and other such instruments that the US has supported in the past, instruments that would in a way be greatly impacted by the presence of a treaty as broad as the one proposed by the proponents of L.41.

France's explanation (offered jointly on behalf of the US and UK as well) is in much the same vein as that of the United States. The explanation focusses on the success of the instruments of the current regime, as well as apprehension about straying from the course already set.[10] Interestingly, Russia's explanation[11] referred to France's joint statement as well, with Russia similarly emphasising on staying the course as well as on the impracticality of the proposed treaty.

8. Full explanation of the Islamic Republic of Iran, available at: http://reachingcriticalwill.org/images/documents/Disarmament-fora/1com/1com16/eov/L41_Iran.pdf. Accessed on December 13, 2016.
9. Full explanation of the United States of America, available at: http://www.icanw.org/wp-content/uploads/2016/10/United-States-EOV.pdf. Accessed on December 13, 2016.
10. Full explanation of the French Republic, available at: http://www.icanw.org/wp-content/uploads/2016/10/France-UK-and-US-EOV.pdf. Accessed on December 13, 2016.
11. Full explanation of the Russian Federation, available at: http://www.icanw.org/wp-content/uploads/2016/10/Russia-EOV.pdf. Accessed on December 13, 2016.

As touched upon earlier, backing the American view was a joint explanation by 26 nations[12] [almost all the North Atlantic Treaty Organisation (NATO) countries plus US allies like Australia and South Korea]. Their rationale for voting against the treaty is that a treaty that deals with a prohibition of nuclear weapons and doesn't have the support on nuclear weapons states is doomed to be ineffectual. They went on to reiterate the viability of the NPT as well and said that the proposed treaty has areas of overlap with the NPT and is, therefore, already applicable to a significant number of member countries. Further citing the NPT, the US-allied bloc said that the proposed treaty doesn't "advance implementation of Article VI" which asks nations to pursue negotiations in good faith. Clearly, amongst the Western nuclear powers as well as a fair number of states that count themselves amongst their allies, there is a strong desire to preserve the status quo in the instruments that deal with nuclear weapons. The Asian nuclear powers of China, India, and Pakistan too showed no particular keenness for Resolution L.41, all choosing to abstain. While China didn't provide an explanation, India and Pakistan did. Their explanations have some similarity with the joint statement of the 26 nations that voted against it, in that both explanations emphasise that the respective countries are committed to a nuclear weapon free world but are uncertain if the proposed conference will be able to yield results. Pakistan also critiqued the proposed conference for, amongst other things, its lack of support from the nuclear weapon states, and stressed that consensus would be an essential element for any such treaty. Aside from the aforementioned, India too expressed a shared frustration with the co-sponsors of L.41.

However, the Indian view was that nuclear disarmament could be achieved in a manner similar to that taken by the Chemical Weapons Convention (CWC) and that the way forward was a Comprehensive Nuclear Weapons Convention (negotiations for which India has supported).[13] India also pointed out that it was not a member of the

12. Full explanation of the 26 nations backing the U.S. view, available at: http://reachingcriticalwill.org/images/documents/Disarmament-fora/1com/1com16/eov/L41_Poland-etal.pdf. Accessed on December 13, 2016.
13. Full explanation of the Republic of India, available at: http://reachingcriticalwill.org/images/documents/Disarmament-fora/1com/1com16/eov/L41_India.pdf. Accessed on December 13, 2016.

OEWG, and therefore would "reserve its position on the report". India's explanation made sure to emphasise the country's support for disarmament as well as express its appreciation for being reached out to by the co-sponsors of the treaty. India noted that such efforts towards dialogue were essential to any way forward. It would appear that India supports much of the treaty but remains unconvinced on the approach towards it.

LOOKING FORWARD

All in all, by the numbers, it would appear that while there is a strong sentiment against nuclear weapons, this sentiment is not shared to the same degree by the states possessing nuclear weapons. Every state that currently possesses nuclear weapons has either abstained or opposed the upcoming conference. In their explanations, the nuclear weapons states made scant reference to the strategic and security advantages they no doubt see their nuclear arsenals conferring upon them. This is, however, alluded to somewhat in the official explanations offered by the United States and Pakistan; the US pointed out that it had been making a gradual reduction in nuclear armaments "…in a way that maintains strategic stability."[14] Pakistan went a step further in its critique of the proposed conference, saying that one of the elements it lacked was it did not account for the "…vital security considerations of states."[15]

If one of the motivating factors for the supporters of L.41 was a sense of discontentment with the current regime and its instruments, there is an equally strong desire to preserve this regime and its instruments amongst the opponents of the treaty or at least a tacit approval of aspects of them. This is likely going to be at the heart of the deliberations and perhaps even a major issue of contention. Given that all the veto power holding nations of the UN appear oppose or disinclined towards the treaty and that not a single nuclear power has spoken in favour of it, the possibility of this treaty coming into force in the manner in which its makers originally envisaged, is not very high. Though in all likelihood, the proposed meeting will

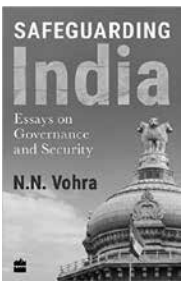
14. n.9.
15. Full explanation of the Islamic Republic of Pakistan, available at: http://reachingcriticalwill.org/images/documents/Disarmament-fora/1com/1com16/eov/L41_Pakistan.pdf. Accessed on December 13, 2016.

see the participation of a majority of nuclear weapon states and their supporters. This is because this conference is the perfect platform for those nuclear (and non-nuclear) states advocating continuity in the nuclear regime to make their case. The best case scenario is that some great strides can be made in the discourse surrounding nuclear weapons and a message sent to the nuclear nuke weapons states. A message that urges them to quicken the pace at which disarmament is being approached. At worst, nothing will change, and as has hopefully been made evident by this paper, for a good number of nations, this is truly the worst that can happen.

However, that does not make this development any less interesting. What is unique about this development is that it shows that discontentment with the existing nuclear regime is cresting, and that the primacy of its instruments may perhaps not always be so. This challenge to the existing order is also a classic example of how often realist considerations clash with ideals in the political sphere. The mainstream media has been quick to term the upcoming negotiations as 'historic'—perhaps they are, but not for the reasons they suggest. Rather than signify some great shift, they are reflective of the more gradual shifts that have been occurring. What will be interesting to see will be the conversations that take place and what they represent. Perhaps by the end of next year, the Doomsday Clock may even be moved back a bit as a result.

BOOK REVIEWS

Safeguarding India: Essays on Governance and Security
by *NN Vohra*
New Delhi: Harper Collins India, 2016
Rs 499/-



K K NOHWAR

The release of Shri NN Vohra's book *Safeguarding India* could not have happened at a more appropriate time – when India is facing mounting challenges to its security, both internal and external.

Shri NN Vohra, an Indian Administrative Service (IAS) officer of the 1959 batch, served in various capacities, notable among them being secretary, defence production, defence secretary, and home secretary. Post his retirement in 1991, he was recalled to serve as principal secretary to the Prime Minister from 1997-98. Presently, he is the Governor of Jammu and Kashmir (since 2008). *Safeguarding India* is a collection of essays written by him for various newspapers/books, as well as transcripts of the lectures that he delivered at the United Services Institution of India (USI) and the Centre for Air Power Studies (CAPS). Having served in important – and critical – assignments that require superlative performance from any officer if he is to leave a mark for future generations (of IAS officers, to emulate), these essays reflect a ringside view of the governance – or lack thereof – that impacts national security.

Air Mshl **K.K. Nohwar** PVSM, VM (Retd.) is the Additional Director General at the Centre for Air Power Studies, New Delhi.

The book is divided into two parts. The first deals with National Security: Internal and External, while the second part deals with Governance: Challenges and Opportunities. The fact that the book is dedicated to the men in uniform who lay down their lives protecting the unity and integrity of the nation, redirects our focus to the recent happenings at Uri on September 18, 2016, when 17 Indian Army soldiers were killed by Lashkar-e-Tayyeba (LeT) militants who fired incendiary weapons along with automatic small arms that led to the Indian Army tents/temporary shelters catching fire. The attack took place early in the morning when the soldiers were still asleep. The Indian Army carried out surgical strikes against terrorist launch pads in Pakistan Occupied Kashmir (PoK) on September 28, 2016, in reprisal for the Uri attack.

Providing a commentary on national governance since 1947, the author's view is that the country made steady progress despite facing problems on several fronts, in the first three decades after independence. In his view, despite three attempts by Pakistan to violate our sovereignty, in 1947, 1965 and 1971, the country thwarted these attacks by rallying together as a nation. The author clarifies that during this period, the political leadership comprised those who had participated in the freedom struggle; most of them were highly educated and were nationalists at heart, and were known for their honesty and high ethical values which gave them ready followership of the people whom they truly served. There was, therefore, no place for the administrative class to do anything but the bidding of their political masters. This situation, however, was too good to last and the bubble burst when, in the late Sixties, the quality of leadership started declining and governance became a casualty to internal feuds and power politics.

The author views the unchecked rise of the population (almost three times what it was at the time of partition), coupled with the inability of the states to ensure the people's participation in the various community development schemes, as the indices of failure of governance. He has also been extremely forthright in attributing this failure to the "brazen misuse and embezzlement of scarce resources" meant for development projects, as well as the "inefficiency and corruption in the administrative cadres".

According to the author, the malaise sets in as soon as a party is elected to power by the people and the ministers and chief ministers of states begin collecting funds for the next election through forced "contributions", and "donations" from the well-to-do industrialists and businessmen, often with the connivance of "pliant and dishonest functionaries (who) have emerged as trusted lieutenants". He is disheartened in reporting that it is such dishonest officers who are given out-of-turn promotions and emerge as "members of politico-administrative coteries which run the states". The author avers that the credibility of the IAS and IPS (Indian Police Service) has suffered as the general perception today almost all over the country is that "all public servants are dishonest, demanding and insensitive to the interests of the people they serve".

This is a sad reflection of Sardar Vallabhbhai Patel's vision wherein he had placed the highest confidence in the all-India services – particularly the IAS and the IPS – which, in his perception would "promote the unity of the country, enable valuable cross-fertilization of the administrative resource in the states and the Centre and provide the states a body of well-trained officers who would, being protected by the Centre, be able to withstand political or other pressures and efficiently run the administration in the states".

What then inhibits the Centre from carrying forward the vision of the iron man of India who strongly opposed Nehru's attempts to do away with the Indian Civil Services (ICS) and the all-India services that had been 'bequeathed' to us by the British? After all, as brought out by the author, it was Patel who had fought for retention of the all-India services, and had finally prevailed while speaking in the Constituent Assembly. Therefore, now that the all-India services are firmly entrenched in running the country, it behoves the Centre to step in and ensure that Patel's vision is carried through to its logical conclusion. This would be no mean task as the nexus among the politicians, bureaucrats, the police, and the mafia has become so strong that it "undermines the very edifice called India".

As the author of the Vohra Committee Report, NN Vohra clearly emphasises the utter helplessness of the Centre/states

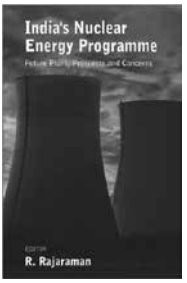
to move against known mafia bigwigs, whose very actions are inimical to the interests of the nation, and who have been allowed to grow due to the utter callousness – and, in most cases, connivance – of the politician-bureaucrat-police nexus. The Director of the Intelligence Bureau (DIB) has also endorsed this in his findings and submitted the same to the Vohra Committee, giving the additional inputs that these smuggling syndicates, while enjoying the patronage of local politicians, have succeeded in creating a parallel economy through international linkages and *havala* transactions. The DIB has been unequivocal in stating that this mafia network is "virtually running a parallel government, pushing the state apparatus into irrelevance".

Virtually every chapter in the book is a scathing attack on the inefficiency of the bureaucrats – his own ilk – who choose to serve their political masters without a care about national interest, throwing caution to the winds and ignoring the Constitution and the rule of law. He has, therefore, been at pains to suggest what has often been recommended as a remedy for improving the governance of the country: amending the Constitution and replacing the Cabinet system with the presidential form of government. This, in his opinion, will "introduce the much-needed honesty and accountability in the functioning of political and bureaucratic echelons". However, he admits that this is merely a chimera as, in the present system of governance in the country, if any change in the Constitution is sought, it would require a two-thirds majority.

The writer has suggested implementing an Armed Forces Act akin to the Goldwater Nichols Act of 1986 by the US in case of continued lack of convergence in the views of the Service Headquarters to the appointment of a Chief of Defence Staff (CDS). Many strategic analysts suggest that a more holistic approach of first restructuring the Higher Defence Organisation (HDO) to include the three Services as part of the Ministry of Defence (MoD) (and, thus, doing away with them being merely attached offices), including military/civil officers in the respective headquarters to create the required synergy, should be the first step. After that, the type of wars that we may have to fight should be considered to elicit the appropriate organisation. Thereafter,

the analysis will determine whether a CDS is, indeed, necessary. It is argued that the institution of a CDS should be the last step in the reorganisation, and not the first. This would pave the way for closer civil-military relations – which is the need of the hour in the increasingly uncertain security scenario confronting the nation today.

Notwithstanding the above, it is evident that the author has written his essays and delivered various lectures – covering the important aspects of national security and governance – out of a feeling of compulsion and helplessness to remedy the malaise of the political-bureaucratic-police-mafia nexus that is impacting national security, and which he has been powerless to remedy. The book is highly recommended reading for all those who cherish India's rightful place in the comity of nations.



India's Nuclear Energy Programme: Future Plans, Prospects and Concerns
R Rajaraman ed.,
New Delhi: Academic Foundation, 2013
Rs 995/-

MANPREET SETHI

Interest in nuclear energy swells and subsides depending on how nuclear power programmes are performing. A surge in interest normally occurs when something goes wrong, terribly wrong, as happened in Fukushima in 2011. At other times, when nuclear plants are operating normally, even beyond their capacity factors, or records are being set in number of days of uninterrupted operations, or new reactors are being commissioned, there may only be a short item of news somewhere in the inside pages of a newspaper. Indeed, negative reporting on nuclear power is far more than focus on positive stories. It is hardly surprising, therefore, that public perception of nuclear energy is clouded by the fear of radiation accident risks that questions the need to pursue such a technology.

Prof Rajaraman addresses these issues from an informed, science-based and academic perspective. In fact, one of the major strengths of the book is that stalwarts from the nuclear establishment engage with influential non-official voices, including those of nuclear sceptics. Given that the supporters and critics of nuclear power rarely share common platforms, with each side speaking for itself and shouting at the other, this book is a good attempt at building bridges.

It is well known that the need for electricity to power India's economic growth and development is on the upswing and will remain so in the coming decades. While the direct contribution of nuclear energy to the total electricity share has been low, the

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experience that the country has accumulated through the safe operations of 21 reactors cannot be dismissed. The unprecedented event at Fukushima did have an impact on public concerns related to issues of nuclear safety, but these need to be proactively and patiently addressed. In doing so, two issues should be at the forefront: firstly, the constraints of India's domestic energy supplies which make it overly dependent (hence, vulnerable) to large scale *thermal fuel* imports; and secondly, the number of safety measures that *nuclear* operators routinely take to ensure minimum risk to the public and the environment. The book has pithy chapters dedicated to both these issues.

Published as it was a couple of years after Fukushima, the book devotes an entire section to nuclear safety and radiological concerns as well as to regulatory and legal issues. Nuclear safety can be said to stand on four legs: optimum technical fixes; good operating processes; effective and independent regulation; and, communication of both of these. The last issue is, in fact, of prime importance since technicalities matter little to public perception unless these are effectively communicated. The book effectively fulfills this mandate. Of particular interest are the two chapters on legal and regulatory issues that trace India's approach to the matter. It may be recalled that the concept of 'regulatory capture' had emerged after the nuclear accident at Fukushima. India then resolved to amend its *de facto* independence of the Atomic Energy Regulatory Board (AERB) to a *de jure* position with a legislative step. Unfortunately though, the Bill has since been pending in Parliament for the creation of the Nuclear Safety Regulatory Authority (NSRA) as an independent regulator.

Yet another interesting section of the book is devoted to the study of issues related to fuel cycles and technology. It is well known that India adopted a three-stage nuclear programme right at the inception of its nuclear efforts. The first stage involves the setting up of Pressurised Heavy Water Reactors (PHWRs). The spent fuel so obtained from these nuclear reactors is to be reprocessed to get plutonium for feeding the next stage of reactors comprising Fast Breeder Reactors (FBRs) and then further ahead to Advanced Heavy Water Reactors (AHWRs) utilising thorium. India has been

operating indigenously constructed PHWRs of varying capacities for decades now. In terms of the second stage, a fast breeder test reactor has been operating since 1985 and the construction of the Prototype Fast Breeder Reactor (PFBR) is almost on the verge of completion. The process of moving to this stage has been long and riddled with many delays. Dr Baldev Raj, along with two other authors, has contributed a fairly technical chapter to the book. They present a good sense of the technical challenges of sodium cooled fast reactors that India has indigenously grappled with and why each step has taken so long.

Meanwhile, in another chapter, Dr Frank Von Hippel explains the history and current status of reprocessing and FBR efforts worldwide. Highlighting the point that most countries have abandoned such efforts, Hippel questions why India should stick to this technology now that it can import uranium from the international market. It is true that the three-stage programme was conceived by India at a time when it was denied access to the strategic material as punishment for refusing to join the nuclear Non-Proliferation Treaty (NPT). With the exemption being granted in 2008 to the Nuclear Suppliers Group (NSG) members to trade with India, fuel availability has surged. In these new circumstances, Hippel questions whether India needs to continue to struggle with FBRs, a technology not many countries have been successful with and hardly any are continuing to pursue.

The answer to Hippel's question would ideally emerge once India has commissioned the PFBR and gained greater clarity on how commercially viable and operationally safe the technology is. But from the point of view of national energy independence, it may be worthwhile to continue to pursue this route. It may be recalled that when India was negotiating the civilian nuclear cooperation agreement with the USA, many had voiced the concern that by easing the imports of uranium to fuel its reactors India would only end up replacing one type of fuel dependency with another—from coal to uranium. This dependency, however, would be a transitional and temporary one if India would move to FBRs and finally to AHWRs. Hence, the logic of the three-stage cycle still holds for India.

One book can hardly be expected to cover all relevant issues. There are always constraints of space and availability of expertise. In this book too, there is a couple of issues that do not find mention. The first of these is nuclear waste management. This is certainly a matter of huge future concern. In fact, one of the major criticisms of nuclear power comes from those who believe that operating nuclear reactors is creating radioactive waste management issues for future generations. A chapter that could have explained the actions that India is taking to address this issue – both by way of searching for the right site for a long-term geological repository, as well as some technical innovations such as the separation of minor actinides from spent fuel to reduce the lifetime of radioactive waste -- would have gone a long way to address public concern on this matter.

A second issue worthy of mention would have been the economics of nuclear power since it has a bearing on the prospect of the programme. Conventional wisdom has long branded nuclear power as expensive primarily because reactors are costly to build. But given that the operating costs of nuclear plants are low and their life spans quite long, such comparisons are not theoretically correct. Moreover, modern systems of cost computing that also include social, environmental, and health related costs, provide a new matrix of cost comparison. In fact, one of the chapters on the impact of nuclear installations on the health of surrounding populations, flags the need for baseline health data to be collected before nuclear plants are constructed in order to build authoritative information on the real impact of such plants. If there was similar data available for areas around thermal plants or coal mines, it would help to compare sources of electricity for their actual costs across a spectrum of parameters. A mere rupee to rupee comparison cannot give the real picture on these issues.

Finally, it would be useful to remember what Homi Jehangir Bhabha used to say, "No power is costlier than no power". Indeed, electricity is a major ingredient of modern existence. Per capita electricity availability is a measure of economic growth and development, and lack of electricity can stunt the potential of a nation. With constraints on availability of indigenous fuel sources

and a growing demand for electricity, India cannot but tap into all available sources. Renewables are beginning to commercially make their presence felt and the additions that they can bring in are most welcome. But even so, the case for nuclear energy as another source of electricity is not undermined.

The book makes a valuable contribution to understanding the plans of India's nuclear power programme as also the concerns that cloud its prospects. Nuclear energy supporters and sceptics both should consider this as essential reading in the larger interest of India's energy and economic future. Meanwhile, the editor would do well to bring out a sequel addressing some of the left over issues.

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Details of the author's institutional affiliations, full address and other contact information should be included on a separate cover sheet. Any acknowledgements should be included on the cover sheet as should a note of the exact length of the article.

All diagrams, charts and graphs should be referred to as figure and consecutively numbered. Tables should be kept to a minimum and contain only essential data. Each figure and table must be given an Arabic numeral, followed by a heading, and be referred to in the text.

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