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Compiled & Edited by:
S. Sadia Kazmi

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SVI FORESIGHT

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Strategic Vision Institute (SVI) is an autonomous, multidisciplinary and non-partisan institution, established in January 2013. It is a non-governmental and non-commercial organization, administered by a Board of Governors (General Body) supervised under a Chairperson and administered by a Management Committee headed by a President/Executive Director.

SVI aims to project strategic foresight on issues of national and international import through dispassionate, impartial and independent research, analyses and studies. The current spotlight of the SVI is on the national security, regional and international peace and stability, strategic studies, nuclear non- proliferation, arms control, and strategic stability, nuclear safety and security and energy studies.

SVI Foresight

SVI Foresight is a monthly electronic journal. It has a multi-disciplinary perspective highlighting on the contemporary strategic and security studies. The Journal is envisioned to be a collection of policy-oriented articles written by its Research Associates, Visiting Faculty and professional experts. The objective is to provide the readership with a concise all-round and real-time policy oriented discourse on contemporary strategic regional and international developments, highlighting their relevance to Pakistan.

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Editor's Note

A new major milestone was achieved by the Pakistan Navy on 13th July 2020 with the induction of Corvette PNS Yarmook. This is one of the two multipurpose OPVs second being PNS Tabuk which is currently under construction. One of the articles included in this issue specifically highlights how the induction of this vessel will help Pakistan secure its maritime borders and act as a force multiplier enhancing Pakistan's naval capability. Another article talks about ASAT capabilities and how they are impacting the regional dynamics of South Asia. It elaborated on military and strategic usage of outer space which has provided states with the ability to have early warning systems, effective nuclear command, control and communication (NC3) and strategic intelligence. The author maintains that space is an ultimate high ground for the information warfare. Today many states are engaged in the space race to gain ultimate control and power. Another article picks up the same theme and talks at length about the possible cyber vulnerabilities of nuclear facilities in South Asia and how could those be adequately addressed. This month also marked the 75th anniversary of the Trinity nuclear tests, hence an insightful take on the event in the current context and the future of nuclear testing has been carried out which has been made part of this issue. The author opines that in emerging multipolar world, post-Covid-19 crisis, and potential threats of future crises situation, nuclear testing would stand as an inevitable threat. The decision of resuming nuclear testing would bring about a whole new development in nuclear realm with further weakening of the disarmament cause. Readers will also find an interesting analysis of Pakistan's military spending and defence budget (2020-21) included in this issue. It is especially insightful as it is the sequel to the analysis of India's defence budget which was made part of previous issue of the *SVI Foresight*. Hence a detailed comparison could provide the readers with better understanding of defence spending and priorities of two nuclear states. Other important subjects covered in the *SVI Foresight* for the month of July include: Impact of the Indian Missile Defence Shield on Deterrence Stability in South Asia, India's Quest for Regional Domination Facing Severe Setbacks from Pakistan And China, Afghan Peace Deal, Regional Stability and the United States. It is hoped that readers will find a good blend of articles focusing both on traditional as well as much needed non-traditional security debate. The *SVI Foresight* team invites and highly encourages the contributions from the security and strategic community in form of opinion based short commentaries on contemporary political, security and strategic issues. Any suggestions for further improvements are welcome at our contact address. Please see here the copy of *SVI Foresight* electronic journal. You can find us on Face book and can also access the SVI website.

Senior Research Associate
Syedah Sadia Kazmi

Impact of the Indian Missile Defence Shield on Deterrence Stability in South Asia

Haris Bilal Malik

In recent years, India has carried out an offensive military modernization program aimed at enhancing its offensive military capabilities. Along with enhancing various conventional and unconventional capabilities, this has been complemented by India's notion of an offensive and multilayered missile defence shield. India intends to materialize this with a provision of both indigenous missile systems along with the acquisition of some of the most advanced and expensive missile systems from Russia, the US, and Israel. The development of advanced air defence systems as well as the acquisition of sophisticated missile defence from its strategic partners would likely provide India an edge over Pakistan's deterrent capabilities. India's such provocative and sophisticated missile defence shield would pose a serious challenge to South Asian strategic stability in general and deterrence stability in particular.

Currently, India's missile defence shield is comprised of diverse missile systems aimed at providing a multilayer aerial protection. These include; India's indigenously developed systems like the PAD (Prithvi Air Defence), AAD (Advanced Air Defence Ashwin), and the Barak-8 with the help of Israel. Apart from these, intending to overcome future challenges, in October 2018, India and Russia have already signed a landmark agreement regarding one of the world's most advanced missile system, the S-400. The first batch of this system with a bit delay was scheduled to be delivered by the end of 2021 and all the five units will be delivered by 2025. The S-400 would likely provide India a long-ranged missile defense shield most probably against Pakistan. Moreover, against the backdrop of India-China recent escalation in the disputed region of Ladakh, with reported 20 Indian casualties, India wants a little bit earlier delivery of the S-400 missile system which is being delayed due to COVID-19 pandemic. Evidence comes from India's Defence Minister Mr. Rajnath Singh's recent three-day official visit to Russia in June 2020. Along with an urgent supply of military hardware comprising of advanced jets and tanks, he urged Russia to speed up the delivery of the S-400 missile system. This indicates the significance of S-400 for India aimed at enhancing its missile defence shield.

In another significant strategic collaboration with the US, India is reportedly in a process of purchasing the NASAMS-II (National Advanced Surface to Air Missile System-II) developed by the US. This is a medium-range missile system, most likely aimed at protecting important cities. With the provision of these advanced missile defence systems, India would be in a much better position to neutralize Pakistan's existing warhead delivery capabilities including the ballistic and cruise missiles, jet planes, and drones with considerable accuracy. This would likely disrupt

South Asia's existing deterrence equation which is primarily balanced by Pakistan's credible deterrence capabilities.

It is quite noteworthy that both these systems S-400 and NASAMS-II are globally recognized as sophisticated and advanced systems when analyzed in terms of their capabilities within their respective categories. These systems, once acquired would likely serve as the key components of India's offensive air defence posture. The S-400 missile system possesses some incredible capabilities which no other advanced system available in the world currently has. For instance, the S-400 is comprised of 8 launchers that can fire up to 112 missiles of various types and ranges. Also, it has a reported tracking capability of nearly 600 kilometers. This enables the system to engage 80 targets simultaneously up to a reported range of 400 kilometers. Likewise, the diversity of engaging targets involves cruise and ballistic missiles, fighter jets and support aircrafts, and the UAVs. In the same vein, the NASAMS-II is capable of hitting various medium-range targets with the provision of surface-to-air missiles, air-to-air missiles, and gun systems. The missile system also comprises of 3D surveillance radars, command and control units, and fire distribution centers, which makes it a sophisticated missile system. These significant developments would likely provoke Pakistan to further consider the prospects and come up with a more plausible way out to address this threat.

To address such a threat, the probability of two options seems plausible for Pakistan. First, as a long term strategy, Pakistan needs to acquire the same missile defence shield from countries like Russia and China. Though, given the economic constraints of Pakistan, the prospects of this option seem very difficult. However, keeping in view the likelihood of India's missile defence shield to get operational in years to come, this plausible option needs not to be ignored in the longer term. The second option is based on a short term strategy within the ambit of a credible deterrence approach. Under this notion, Pakistan could enhance its MIRV capable ballistic missile delivery mechanism as an immediate resort to respond. In this regard, Pakistan's MIRV capable medium-range ballistic missile Ababeel is worth considering. This is believed to be aspired to give a befitting response to India's enhanced air defence by penetrating it quite efficiently. Furthermore, it is also speculated that an advanced version of Ghaznavi ballistic missile, which Pakistan has tested earlier this year is also MIRV capable. Such existing capabilities would likely serve the purpose of neutralizing the prospective impact of India's enhanced missile defence shield at least for the time being.

Hence, it seems quite apparent that India wants to be perceived as a technologically advanced military power, capable of preserving a deterrence posture in South Asia, which is also based on the provision of its advanced missile defence shield. In this regard, India is enhancing its air defence capabilities with the provision of a multi-dimensional missile system. This is primarily aimed at assuring a sophisticated missile defence shield to counter Pakistan's capabilities based on a credible deterrence approach. India's enhanced missile defence

capabilities would likely disturb the current state of deterrence stability in South Asia even further. Pakistan does not necessarily need to be at par with India; however, at least it should maintain a balance of power to preserve peace and stability in South Asia.

http://southasiajournal.net/impact-of-the-indian-missile-defence-shield-on-deterrence-stability-in-south-asia/

Emergence of Security Threats in South Asia out of the Policies and Actions of PM Modi Government

Irfan Ali

It should be noted that the policies and actions carried out by the Indian government headed by Prime Minister Narendra Modi have generated severe threats for security, peace, and stability of the South Asian region. PM Modi has been following the hawkish, expansionist and extremist policies in the South Asian region, such as revocation of article 370 and 35A in Jammu and Kashmir including the introduction of Citizenship Amendment Act (CAA) and National Register of Citizens (NRC) within India. Besides this, Indian increasing military budget and Military Modernization have also raised serious security threats for the regional states, particularly Pakistan. As the regional security complex theory defined by Barry Buzan in his book "Regions and Powers: The Structure of International Security" where he mentions that the increase in military and defense budget by one state in the region also generates serious dangers for other regional nations, especially for adversaries. Consequently, the region faces the emergence of multiple issues such as Indian skirmishes with Nepal, China and Pakistan on the bordering region.

In this regard, Major Gen (retd) Inamul Haque while talking to The Express Tribune further explained that Indian spy agency the Research and Analysis Wing (RAW) is directed to work against Pakistan as well as China. As far as the RAW's involvement in other regional states is concerned, there are many shreds of evidence of its support to other rebellious activities such as "Tamil Tigers in Sri Lanka and Kachin rebels in Myanmar". Furthermore, it also works in close collaboration with Afghanistan's intelligence network and has made numerous attempts to create hurdles for Pakistan. The involvement of Indian Intelligence Agency RAW in various terrorist activities within the South Asian region provides ample evidence about Indian government's involvement in destabilizing the region, ruining peace, and spreading terrorism as well as terrorist elements among regional states.

Similarly, Delhi has been sponsoring the terrorist activities in other regional states, for instance, Pakistan. In 2016, the arrest of Indian spy Kulbhushan Jadhav, "a serving commander of the Indian navy", from Baluchistan (one of the four provinces of Pakistan) was a proof of the involvement of India in sponsoring terrorist elements within Pakistan and deteriorating the peace of the country. Delhi's such activities which aim at helping the terrorist activities within other regional states raise many questions over the BJP government. Recently attack over the Pakistan Stock Exchange (PSX) also hints at Indian involvement. Pakistan's PM Imran Khan during his speech in National Assembly also said that Islamabad is sure about the Indian involvement in an attack on PSX.

Moreover, on August 05, 2019, PM Modi's decision of abrogating Article 370 and 35A from Jammu and Kashmir, that is the internationally recognized disputed territory, is the violation of United Nations Security Council Resolutions, Geneva Convention and the UN Charter. As this allows India to grab Jammu and Kashmir under the Indian Union territory. Indian security forces have been committing various kinds of brutalities against the people of Kashmir since the abrogation of article 370. Similarly, PM Modi's statement that he not only wants to occupy Indian occupied Jammu and Kashmir but also aims to snatch Pakistani controlled Kashmir and Northern areas of Pakistan is based on his extremist, aggressive and expansionist ideology that could pose a severe threat to the peace and stability of the region. Also, BJP's Hindutva supremacist government portrays hatred and hostility towards Islamabad with unprovoked firing over Line of Control (LOC). This could lead to strategic miscalculation between both nuclear powers that might generate disastrous consequences. Aggressive policies and statements by PM Modi have alarmed the authorities in Pakistan regarding vicious plans of BJP government. Consequently, the threat of war between both nuclear powers has increased, which could be devastating for peace and stability of South Asia.

As far as China and Nepal are concerned, both these nations criticized and condemned the Indian expansionist policies where it has been involved in building a road and defense facilities in disputed Galwan area of Ladakh and Nepal's Lipulekh Pass territory. India through its vicious plans is trying to jeopardize peace and stability of the entire region such as clash with Chinese troops in the border region of Ladakh in which many Indian soldiers lost their lives amid clash and various Chinese soldiers also got injured. In this regard, PM Modi's expansionist policies and actions concerning bordering states, such as Nepal and China could cause for the escalation of conflict between Delhi and neighbouring states. India has been involved in the violation of established mechanism and bilateral understandings and agreements with its neighbours by taking unilateral actions. The Hindutva Supremacist Modi Government because of its aggressive and expansionist designs is becoming a severe threat to regional states by putting regional security at risk.

Government of Pakistan, along with military forces, has been actively working against militant groups which are harmful to the state as well as regional peace and stability. While BJP government takes actions such as February 26, 2020, an airstrike against alleged Jaish-e-Muhammad camp near Balakot in Pakistan following a suicide bombing on February 14, 2020, in Pulwama in Indian Occupied Jammu and Kashmir which killed 40 Indian paramilitary forces. Resultantly Pakistan had no choice except responding in its nation's defense. However, both nations are nuclear powers, once Islamabad responds then it might go towards the deaths and destruction of both sides. In this regard, former foreign secretary of Pakistan Shamshad Ahmed Khan said that PM Modi's government in India follows racist and sectarian policies. Though, misinformation is also spread by Indian agencies and diplomats around the world. The policies and actions followed by PM Modi are not only damaging the secular image of India but also

posing a threat to regional peace, stability and security. Consequently, International Forums and states that entertain the slogans of peace, human rights, avoidance of war and conflict should take notice of PM Modi's hawkish, fascist, aggressive and expansionist policies and actions so that the world in general and South Asia in particular could be saved from any misadventure and conflict.

https://www.eurasiareview.com/14072020-emergence-of-security-threats-in-south-asia-out-of-the-policies-and-actions-of-pm-modi-government-oped/

Pakistan's Military Spending and Defence Budget 2020-21

Sher Bano

Last month the federal government of Pakistan announced its annual budget 2020-21 according to which Rs.1, 289 billion has been allotted to the defence sector. The defence budget has increased by 11.9% in the fiscal year 2020-21. However, if compared with the 2019-20 revised spending, which was Rs.1, 227 billion, the growth would be 5%. The increasing tensions between India and Pakistan post-Pulwama and the Kashmir issue are one of the main reasons behind this increase in defence spending. The defence policy of Pakistan and military spending have always been India-centric. Hence Pakistan being a much smaller state in order to maintain the conventional balance vis-à-vis India has to enhance its defensive capabilities, e.g. short-range weapons. Due to the volatile, complex and ambiguous strategic environment, military spending is essential for Pakistan.

According to the defence budget of 2020-21, the share of navy has increased and reached 10.85 %. Similarly, PAF budget has been increased to 21.25%, the army budget has increased up to 47.55%, and there has been 20.33% increase in the budget for inter-services establishment. Whereas last year the navy's share was 11.3%, while for PAF it was 22%, for army 45.4% and 21% was for the inter-services establishment. This year Pakistan navy gets Rs.140 billion, PAF Rs.274 billion, army Rs.613 billion and Rs.262 billion will be given to inter-services establishment. Moreover, for the employee related expenses Rs.475 billion have been allocated, Rs.301 billion will be given for operating expenses which include ration, transport, POL, training and medical treatment-it is 13.77% increase as compared to the previous year. For the import of arms and ammunitions and local purchases, Rs.357 billion have been allotted, which is 13.3% increase as compared to the previous year. The civil works section will grow by 26.14% as the amount allotted to it is Rs.155 billion. The growth in the civil work component was essential because of two major projects that are currently being commenced by the military i.e. the construction of border posts and fencing of Afghanistan and Iran borders. This year the lowest increment is given to the employee related expenses which are 5.6%.

In the developing states which have various military and strategic issues, the effect of military spending upon the economic growth has always been controversial because of continuous tensions between foreign policy and defence compulsions on the one hand and socio-economic needs on the other. However, according to the classical economist Adam Smith "The first duty of the state is to protect its society from the injustice and violence of the other societies as it moves towards civilization". Despite limited resources, the Pakistan army has been fighting successfully on both the borders in the east and west. About 800 million dollars is the expected cost of the border security plan. Moreover, for years Pakistan army and law enforcement agencies have been fighting against terrorism, operations like Zarb-e-Azab and

Radd-ul-Fasad are among the great achievements in the mission to eradicate terrorism from the country. Hence principle responsibility of every state is to enhance its defence forces for the sake of survival and to maintain sovereignty. Hence for Pakistan in order to tackle with these internal and external threats, it has become necessary to increase its defence budget.

The continued animosity and strategic competition between India and Pakistan are also one of the main reasons that Pakistan had increased its defence budget by 11.9% in the ongoing fiscal year. Both countries were at the verge of war after the Pulwama incident when Indian aircrafts entered Pakistan. It was due to the timely and effective response of the Pakistan air force that forced Indian jets to flee, and the situation did not escalate. Hence Pakistan must maintain the strategic parity and conventional balance in order to deter India. India has enhanced its defence spending by 6% this year. According to the SIPRI (Stockholm International Peace Research Institute) annual report, India has the third-largest military budget in the world. The excessive Indian defence spending creates a security dilemma and compels Pakistan to maintain a precarious military balance by increasing its defence spending. According to the recent budget, Pakistan's emphasis would be on procurement of the equipment's to enhance air defence capabilities, improve operational capabilities of the naval fleet and to advance surveillance and communication systems. Pakistan needs to protect itself with all the available means after looking at the grand designs of India. The basis of defence planning has always been threat perception. Moreover, when one has to defend itself against a much larger enemy with the comparatively weak resource, even minimum sufficient defensive capability can only be attained through attaining massive share of the nation's resource.

Currently, Pakistan is facing different challenges and threats to its security posed by its long-term enemy India. Given the growing tensions among both countries Pakistan has increased its military budget 2020-21 in order to maintain strategic balance in the region vis-à-vis India.

http://southasiajournal.net/pakistans-military-spending-and-defence-budget-2020-21/

Post-Pandemic Energy Shift to Nuclear Power

Hanana Zarrar

The age of clean energy is already here while ongoing pandemic has severely affected global economy and energy markets. Fossil fuel industry and coal-based generation that holds more than 80% share in global energy supplies and electricity generation, suffers to operate at low capacity with decreased energy demand.

Global restrictions on travel caused the biggest drop in oil demand in last 25 years while drop in coal demands is estimated to be 8-10% compared with last year that shows largest decline since second world war. The plunge in energy demands and collapsing prices are becoming a major hurdle for global economic recovery in coming years. This scenario promotes the reliance on renewable and clean energy resources for coming decades. It has also underlined the importance of electricity reliability and resilience during major disruptions. While governments are overwhelmed to secure long-term energy availability and market requirements, the post-pandemic sustainable energy systems have become the immediate need.

The energy industry that would emerge out of this crisis would certainly be distinct than the one existed before the pandemic. The fossil fuel industry is exposed to have been lagging two-dimensionally i.e. first, not being an environment friendly way of producing energy and second, unable to sustain such crisis scenarios where the demand drops and market collapses. Besides many renewable energy resources, nuclear energy stands as the most environment friendly and cost-effective energy resource.

European countries are among top nuclear power dependent countries for their energy mix. Belgium, Spain, Sweden, Ukraine, Germany, South Korea are among the countries having more than 20% of nuclear power role in their total electricity production. Thus, there energy markets seem to be able to withstand the ongoing energy and economic recession. France, having the largest nuclear fleet that produces 74.8% of total electricity, is one of the most Covid-19 affected countries yet one of the biggest reasons of its continual sustenance is its largely nuclear dependent energy sector.

The recent policy briefs of Nuclear Energy Agency NEA highlights that the investment in nuclear energy and power plants is proven to create a larger amount of highly skilled and valued jobs, deliver widespread growth along with energy independence and security of supply, and helps build resilience against geopolitical shocks as well as speeding up the post-pandemic recovery. Thus, strengthening the case of energy shift to nuclear power with increase in the construction of nuclear power plants across the globe.

The race in nuclear power generation is expected to be another dilemma globally in times ahead. Besides increasing nuclear capacity via upgrading existing plants within countries, nuclear power capacity is increasing worldwide with 55 new reactors under construction. Most of these nuclear reactors are planned to be placed in Asian region i.e. China, Russia and India. Asian region is already under the action-reaction mode in terms of economic and military competition between countries with hegemonic postures. China, along with its other priorities of health and economic recoveries, is going to enhance its nuclear power capacity at a faster pace.

The case of India is nonetheless distinct. Currently, there are seven under construction nuclear reactors in India. India already has the waiver to acquire civil nuclear technology and fuel from other states. This exemption and post-pandemic cautions predict Indian inclination towards greater nuclear power supply. It is here to examine what this nuclear sector competition would bring to the already volatile region and what repercussions it would bring along.

Post-pandemic new normal seems to have paced up the global move towards clean, sustainable and manageable energy means to secure the market. Additionally, nuclear power reliance is going to accelerate in next half century for early preparedness and resilience against future global crises and economic shortfalls like the one currently crippling the world.

https://www.eurasiareview.com/15072020-post-pandemic-energy-shift-to-nuclear-power-oped/

Artificial Intelligence without Cyber Resilience in South Asia

Ahyousha Khan

Artificial intelligence is becoming one of the defining technologies of 21st century. Today AI is being deployed in health care systems, financial trading, translation and transportation and military technology massively. The technology and terminology "artificial intelligence" are not the product of 21st century, rather the term was coined in 1956 at Dartmouth summer workshop organized to develop thinking machines. However, there is no single definition of this technology, thus is quite difficult to define. According to a definition proposed by European Commission, artificial intelligence (AI) is a system with capability to achieve given goal by acting physically or digitally, after perceiving their environment by interpreting the structured or unstructured data, reasoning the knowledge derived from this data and deciding the best actions to perform the given goal. This definition identifies the capability to perceive, interpret and reason as the pre-requisites for AI enabled systems. Due to its capability of intelligence monitoring, reconnaissance, target recognition, communication and navigation, automated command and control, precision strikes, AI enable systems are becoming necessary for militaries. Artificial intelligence is not a standalone technology, rather enhances or adds new features when integrated into military systems. AI's integration into military systems is a double edge sword. On the one hand it is improving the existing systems by providing precision, intelligence, detection and decision making tools, on the other hand it is increasing risks and vulnerabilities for the existing structures and systems.

Today policy makers are discussing issues like whether to trust machines, as machine speed is enhanced manifold due to AI, which in asymmetric contested environment would make it difficult for the commander to contain, control and terminate the event because of the enhanced speed of the contest. Moreover, under the pressure of limited time and speed, state might accept a higher risk and escalate under the imperative of use it or lose it situation. Moreover, another issue with utilization of AI in military systems is the biasness of the algorithms encoded into them by human engineers, which could trap human operators into machines' biased and flawed assumptions. The integration of AI into anti-submarine warfare would reduce the survivability of SSBNs, which would be damaging for the nuclear deterrence and strategic stability between nuclear rivals. By improved ability to collect and recognize different submarine signatures, AI would play an effective role in anti-submarine warfare.

Most of the research related to AI in military systems is associated with their contribution as catalyst in offensive or defensive operations. However, one less discussed fact in this regard is the security of the artificial intelligence based systems. Today artificial intelligence is used in missile defence and reconnaissance, which enhances the target

recognition, image and pattern recognition and trajectory calculation. Moreover, it can also assist in analysis of damage effects. Enhanced intelligence and trajectory calculations will assist states in more guided and precision strikes. All these technological developments reveal that artificial intelligence is enabling states to gather massive information and processing it to achieve desired objectives. However, artificial intelligence does not exist in vacuum. It is essential to recognize that all the data amassed, processed and utilized with the help of artificial intelligence needs protection and security. Moreover, besides data, machines and their algorithms also need to work effectively to avoid manipulation and breach. This brings us to the point that though artificial intelligence is a necessity for national security of states and is largely adopted worldwide, this technology also needs to be secured against cyber-attacks. To protect such systems it is necessary that states build resilience against them. It is necessary that AI systems should be protected from cyber-attacks and whole infrastructure of state must have cyber resilience.

With increased dependence on information technology and rapid digitization of systems, term cyber security gained momentum. However, these systems not only need to be securitized but they should be resilient against the threats. Cyber resilience is the ability of the system to operate during an attack and achieve a minimum level of operationalization while responding to an attack. It also enables system to develop a back-up system that works in case of attack. Cyber resilience is a step forward from cyber security because it not only ensures the security of system, but also identifies the threats to it and then proposes the system that could work amidst such attacks. Most military systems are resilient against kinetic attacks because resilience and survivability go hand in hand. But, with modernizations in military it is necessary that state's cyber networks which are working on artificial intelligence must be resilient against kinetic and non-kinetic attack.

Today states are in race to use the AI in their military systems to achieve maximum military gains and denying their adversary the same. Situation is not so different in South Asia where two nuclear rivals of the region are paving the way towards use of artificial intelligence for military purposes. India has developed Center for Artificial Intelligence and Robotics (CAIR) in DRDO, with the aim to develop AI within the military systems to improve geographical information system technology, decision support systems and object detection and mapping. Moreover, companies like Bharat Electronics Limited (BEL) are already in the process of developing and incorporating AI into military equipment. This includes AI-enabled patrol robot developed by BEL built in the hope to be utilized by the Indian military. Moreover, in 2019 India's Gen. Bipin Rawat said adversary in north is spending huge amount on AI and cyber warfare, so we cannot be left behind in this race. It is mostly projected by the Indian policy makers and many international scholars that India is facing adversaries at two fronts (China-Pakistan), to justify India's military expenditure and modernization. However, recently, events like Galwan Valley clash evidently exposed that India's military capabilities are mostly against

Pakistan. Moreover, South Asia's security dynamics are heavily characterized by the action-reaction chain. To avoid security dilemma vis-à-vis India, Pakistan would also invest in AI. At the moment Pakistan has also started working towards achieving expertise in AI. In 2019 President of Pakistan launched PIAIC with focus on development of skills in AI to strengthen economy and defence systems. Moreover, there are centers like National Center of Artificial Intelligence and Department of Robotics and Intelligent Machine Learning in NUST, which are working to improve AI based knowledge in Pakistan. Besides that Pakistan recently launched a program named "Digital Pakistan" to increase access and connectivity, digital infrastructure, e-government, digital skilling and training and introduce innovation and entrepreneurship.

There are many studies done on the implications of AI on nuclear deterrence and strategic stability in South Asia. These studies highlight that due to prevalent asymmetry in conventional military build-up, introduction of AI into military technology would worsen the already fragile deterrence stability of the region. This assumption is based on the argument that due to AI in reconnaissance systems, high-level intelligence collection would affect the survivability of nuclear weapons, which is based on diversification and concealment. However, AI would also enable both states to have more response options in a short time with the help of decision making tools in case of crisis, especially in aerial battle.

Moreover, both states are moving towards the massive digitalization of their military systems and society without building cyber resilient systems. Resilience can be built against the vulnerabilities like human factor, massive speed of the systems, protection and storage of data and advanced persistent threats (ATPs). Artificial intelligence based systems must be incorporated in societies and militaries along with mechanisms to strengthen the cyber security systems. A front runner in AI like US has also expressed concerns over the need for modern equipment to operate on "internet-like networks" and subsequent increased vulnerabilities due to their applicability. Therefore, military modernization can happen effectively through cyber resiliency in military systems, network processes and cyber architecture. Cyber resilient system would enable state to develop a system that would remain functional during a phishing attack. Steps like cyber deception, agility and clone defense could increase resilience in the existing systems. This is important to understand in already lacking strategic stability, military systems based on artificial intelligence would be an ideal target of AI advanced persistent threats in South Asia.

Therefore, as the process of digitalization is increasing in Pakistan-India equation, it is also becoming very important that both states should develop resilience in their cyber systems so that the technologies could give them advantage rather than becoming a security peril for them.

https://moderndiplomacy.eu/2020/07/17/artificial-intelligence-without-cyber-resilience-in-south-asia/

Eradication of Terrorism from Pakistan

Basma Khalil

Over the last decade Pakistan has made commendable efforts to eradicate the menace of terrorism from the state. Operations like Zarb e Azab and Radd ul Fasad carried out by Pakistan military against the non-state actors and militants successfully marked the triumph of Pakistan in the eradication of terrorism. After the successful operations, initiation of de-radicalization process and reintegration of people, added to the military efforts in dealing with the internal factors causing the unrest. Domestic situation of the affected areas is much stable now which has positively impacted the overall security of state and also contributed to the peace. Pakistan successfully addressed the domestic vulnerabilities but the foreign threats to Pakistan are still there causing disruption to the peace and stability. In recent past there were terrorist incidents such as Sikh Shrine Attack and the most recent attack on Pakistan Stock Exchange which clearly indicates the foreign involvement.

To eradicate and counter these acts of terrorism in Pakistan, the Government has taken a number of initiatives which include the setting up of organizations like National Counter Terrorism Authority (NACTA) and Counter Terrorism Department (CTD). These organizations are taking appropriate measures against terrorists and terror activities. NACTA formulated a National Action Plan (NAP) which added to the strength and direction and military operations withholding its strong commitments against terror financing, political and religious persecution reforming the criminal justice system along with the rehabilitation and reintegration of people of terror affected areas which resulted in the national peace and security. In recent years a new counter terrorism strategy, <u>Pakistan Action to Counter Terrorism (PACT)</u> in KPK has been launched in collaboration with special focus on the procedures related to counter terror financing activities and training in prosecutions and investigations of terrorism related cases and enhancing skills and knowledge of law enforcement officials, prosecutors and judges. On February 26th 2020, Pakistan Action to Counter Terrorism (PACT) was launched with special reference to Sindh having same objectives as the KP program focusing on improved and better inter-provincial coordination in context of counter terrorism efforts.

To deal with terror financing activities, the government of Pakistan has successfully met the requirement of <u>14 points out of 27 agenda points of the FATF which includes</u> updating the lists of proscribed persons on the website of NACTA and its   regular updation , precautions in the State Bank of Pakistan to keep a strict check and balance of bank accounts regarding verification of bank account and flow of the money from the accounts. Also to keep a strong watch on all entry and exit points of land, air and sea Customs controls units, effective utilization of local groups against terrorist financing, and provision of strong and improved investigation tools and techniques against terror financing and awareness campaigns for all

stakeholders regarding financing of terrorist entities. On June 24th 2020, virtual plenary meeting of FATF was held.. President of FATF chaired the meeting which is third and final meeting under Chinese presidency. After reviewing key developments, the deadlines for country specific decisions have been extended until the next plenary meeting. Consequently, the decision for Pakistan regarding grey listing has also been postponed till the next meeting. However, India tries to propagate the narrative that Pakistan will remain in grey list of FAFT in the backdrop of June 2020s plenary meeting but MOFA rejects such dubious statements from India. Pakistan brings it to the notice of international community that India wants to use FATF for its shallow political goals. Attack on Pakistan stock exchange can also be part of Indian conspiracy to malign the Pakistan's efforts of meeting the FATF recommendations and controlling terror activities in Pakistan because it was carried out on June 29th right after the plenary meeting. Prime Minister of Pakistan stated that we have no doubt that India is behind the attack. Later on BLA took the responsibility of attack which clearly indicates the involvement of RAW. There is no doubt that Balochistan is vulnerable to the exploitation but the de-radicalization and reintegration of Baloch population through Peaceful Balochistan Package initiative by the government has considerably lessened the chances of exploitation. So, despite India's state-sponsored terrorism and supporting radical elements against Pakistan, Pakistan is still moving steadily towards peace and eradiation of terrorism which although has long path to cover but not impossible.

Nevertheless, it would take time to completely eradicate the terrorism. But Pakistan has already started working on long term strategy to counter terrorism which includes the initiatives like Pakistan Action to Counter Terrorism (PACT) KP and Sindh. However Pakistan still needs hard work to stabilize the situation of Balochistan although it has done a lot but it still needs a long term strategy to curb the resurgence of terrorists militia groups we need intelligence based policies, strong anti- terrorism legal frame work, and address the grievances of unprivileged people. Government has already addressed the issues partially but it still requires a long time to fully achieve the goal of national peace and integrity free from the menace of terrorism.

https://www.eurasiareview.com/18072020-eradication-of-terrorism-from-pakistan-oped/

Afghan Peace Deal, Regional Stability and the United States

Irfan Ali

Afghan Peace deal that concluded between the U.S. and Taliban was really a good sign which could generate peace within a war trodden region which has been remained under conflict for very long. As far as the U.S. involvement and policies with regard to Afghan issues are concerned, either the U.S. is confused or trying to make other nations confuse. However, it is clear from the domestic circumstances within America and the response of the people that they have become tired of this long-lasting war in Afghanistan. In this regard, the U.S. Secretary of State Mike Pompeo said that "the United States will not fight in perpetuity in the graveyard of Empires". Could the land of Afghanistan through this peace deal get rid of such a long war? Could this truce really be successfully converted from peace in papers to peace at the ground? Or it is going to be the tail within books or documents. These circumstances compel nations to look over the track record of the United States and its agreements with various countries like Iraq, Iran, etc. where the U.S has broken agreements and deals without caring for any nation even including the parties to agreements and deals. Along with such kind of behavior, it looks too difficult to make peace in the region since former American president John F. Kennedy rightly said: "Peace does not rest in the charters and covenants alone. It lies in the hearts and minds of all people. So let us not rest all our hopes on parchment and on paper, let us strive to build peace, a desire for peace, a willingness to work for peace in the hearts and minds of all of our people. I believe that we can. I believe the problems of human destiny are not beyond the reach of human beings."

As far as the role of Pakistan in the US-Taliban peace deal is concerned, it looks positive and having much importance via glancing over its historic role since the Soviet Invasion and 9/11 incident. Pakistan, being a neighbour as well as having historical and cultural affiliation with Afghanistan, keeps much influence in Kabul's domestic demeanours. In addition, the Soviet invasion of Afghanistan in 1979 became the primary source of the strengthening of people to people contact and inter-governmental level relations between Islamabad and Kabul. The triangular bond of Washington-Islamabad-Kabul retreated the Soviet Union from further moving ahead. The combined success of Washington-Kabul-Islamabad brought them closer as trusted and tested friends. While all three countries also had their own interests, including the collective or general interest of each nation. Peshawar (city of Pakistan and Capital of K.P. province) was the hub of all activities against the Soviet Union therefore dominant personalities of Afghanistan who were fighting against soviet came further close to the government of Pakistan. Furthermore, most of the Afghan war veterans after the defeat of the USSR or Soviet disintegration made government in Afghanistan such as Mullah Omar, who was the significant figure in the war against the Soviet Union and had good relations with Pakistan as well.

Moreover, Mullah Abdul Ghani Baradar also remained under the detention when he was arrested in Pakistan then was released. Since than Islamabad had cordial relations with essential personalities of Afghan War who now dubbed as Taliban by the U.S. In this regard, Pakistan can play a vital role in bringing the peace in the region, therefore, it will be the biggest mistake of the U.S. if it tries to exclude Islamabad from Afghan issue.

The Peace deal leaves a positive impact on regional security as well as Pakistan if it is conducted successfully through rational observation of circumstances by all stakeholders. It will reopen the new vistas of opportunities such as turning the country's direction from terrorism to tourism and other multiple things which will be very useful for the development and stability of the country. Besides, Imran Khan said in his speech to Iran that Trump had also told him to mediate between Saudi and Iran. If Saudi-Iran relations goes towards the normalization, this will also prove decisive for regional stability and progress. However, the record of the United States concerning the solution of these regional issues does not show an optimistic picture. The question arises if the U.S. does not want to solve the problems then why it releases such statements which do not have any practicality. It might be just because of diverting the attention of regional countries from one agenda to another which serves the U.S. interests.

Furthermore, it is also considered that there is a hidden agenda of the U.S. behind such kind of statements of normalizing the differences between both Saudi Arabia and Iran. It might be another agenda of America by showing the world that it wants to make peace in the region through normalizing the Iran-Saudi tension, but these could only be words that do not keep the essence of practicality. Similarly, the recent development by the U.S. Administration over Kashmir is not fully disclosed that what are the objectives of the United States behind this new statement? Because the U.S. has been playing the role of trouble creator since long, whenever America realizes that it can achieve its national interest just through giving a statement that will never be materialized, it does this for achieving its objectives and interests. In this regard, all the regional states have to make policies and take actions that will prove beneficial for the peace, stability, and progress of not only regional states but also for the whole world instead of waiting for American dictations and decisions.

http://southasiajournal.net/afghan-peace-deal-regional-stability-and-the-united-states/

India's Quest for Regional Domination Facing Severe Setbacks from Pakistan And China

Haris Bilal Malik

India has held a long term desire to be recognized as a great power with an overwhelming global strategic outlook. This is further aimed at enhancing its military, economic, and political influence in the region and becoming a regional hegemon. In this regard, India has been carrying out an extensive military modernization program intending to fight a two-front war. This is all because India considers both of its neighboring countries Pakistan and China as its adversaries that can militarily challenge India's acceptability as a great power. To overcome this notion, in recent years, India has initiated various limited conflicts across LOC (Line of Control) and LAC (Line of Actual Control) with both Pakistan and China respectively. Nevertheless, the befitting response on both occasions has brutally exposed India's incapacity to qualify as a regional power. The Pulwama-Balakot conflict of 2019 and the Ladakh-Galwan conflict of 2020 have turned out to be a diplomatic and military embarrassment for India. Furthermore, India's aspiration to achieve the great power status while dominating the region would likely put the security of the region at a greater risk of war and conflict ultimately destabilizing the region.

The Pulwama-Balakot crisis between India and Pakistan started when on 14th February 2019 a convoy of India's CRPF (Central Reserve Police Force) was attacked by a young Kashmiri boy. This was a suicide attack that resulted in the killing of 44 personnel of CRPF. Soon after the attack, as part of its traditional blame game, India accused Pakistan for sponsoring the attack that too without any evidence. Even though Pakistan asked to provide any solid and undeniable evidence of its involvement, India created war hysteria against Pakistan. On February 26, 2020, India reportedly intruded into Pakistan's air space with its fighter jets. This act was projected by India as a 'surgical strike' under the self-proclaimed notion of a 'new normal' in South Asia. The very next day, Pakistan responded befittingly by downing two fighter jets of the Indian Air Force (IAF) and capturing a pilot alive. The evidence of which was acknowledged at the international level. Whereas, on the other hand, India's both claims of killing 300 militants inside a training camp in Balakot and the downing of Pakistan's F-16 jet remain questionable. Likewise, Pakistan's commitment to conflict resolution in the region is also evident with its move of releasing the captured pilot Wing Commander Abhinandan Varthaman on March 1, 2020, as a peace gesture. This turned out to be a huge embarrassment for India at both military and diplomatic levels. The whole episode in which India started to project its role as a regional hegemon with military supremacy faced a huge setback from Pakistan.

In the same vein, the Ladakh-Galwan crisis between India and China is also worth considering. The military standoff between the two countries started in early May 2020 in

India's occupied territory of Ladakh in the long-disputed Kashmir region. This conflict along the LAC has been regarded as the most dangerous clash between both countries since the war of 1962 in which India was humiliated by China. The recent crisis has its roots in India's August 5, 2019 unilateral move to revoke the special constitutional status of disputed Kashmir region and dividing it into two separate territories i.e. Jammu and Ladakh. Since then, aspiring for regional domination, India has been increasing its military presence in the Ladakh region along with constructing a road infrastructure near China's posts in the Aksai Chin region. These moves were perceived by China as a threat to its interest in the region and provoked it to take countermeasures. Consequently, China took over the territory in the Galwan valley across the LAC. The resultant hand to hand fighting between the troops led to 20 casualties of the Indian troops. It is quite embarrassing for India as it has faced such loss of personnel without a single bullet being fired by the Chinese troops during the standoff. Interestingly, now despite India's desire for de-escalation due to humiliation, China doesn't seem willing to completely withdraw its troops. China has been reportedly maintaining a presence of forty thousand troops in the region even after two months. Moreover, against the backdrop of this crisis with China, India has requested Russia to provide additional weaponry including jets and tanks along with early delivery of the S-400 missile system. Hence, the Ladakh standoff has also met a humiliating fate for India and turned out to be a huge setback at the military and diplomatic levels.

It is also worth mentioning here that a recent regional development may be damaging India's strategic interests beyond the region as well. On July 15, 2020, China and Iran have finalized a 25 years comprehensive strategic partnership deal of US $400 billion. Apart from other projects, this includes the construction of a rail line from Chahbahar Port to Zahedan city along with the Afghanistan border, expected to be completed by March 2022.

In the longer term, the strategic cooperation would be extended to investments in infrastructure including; manufacturing industries, up-gradation of energy and transport sectors, refurbishments of ports, oil refineries, and provision of Iran's oil and gas supplies to China. The project was initially signed between India and Iran back in May 2016, but now India has been replaced by China. This would likely further pave the way for China's possibly larger role in the proposed Iranian Chabahar port.

Likewise, it can provide an opportunity for both Pakistan and China with the prospects of including Iran in their ongoing flagship project of CPEC. Furthermore, this deal has more significance against the backdrop of recent border clash between India and China in the Ladakh region.

Summarizing it all, India aspires to dominate the region while trying to expand its political, military, and economic muscles against Pakistan and China and aspired to fight a two-front war. It has carried out unilateral diplomatic and military moves to project its influence in the region and beyond. This has been evident from the recent conflicts with both of its

neighboring countries. However, the resultant embarrassments which it had faced during conflicts with Pakistan and China have further exposed its military vulnerabilities.

The fact remains that regardless of the massive military modernization and maintaining a huge number of forces, it is the efficiency, professionalism, and appropriate response of the country during the crisis that will help it prevail. This is where India considerably lacks. Nonetheless, Pakistan and China both should continue playing their roles to ensure peace and stability in the region.

https://www.eurasiareview.com/28072020-indias-quest-for-regional-domination-facing-severe-setbacks-from-pakistan-and-china-oped/

PNS Yarmook: An Upgrade for Pakistan's Naval Capability

Sher Bano

Pakistan Navy has always played its part to contribute towards national security. It has been working to secure the maritime boundaries of Pakistan while adopting a credible deterrence approach. On July 13[th,] 2020 induction ceremony of Pakistan Navy Ship called Corvette PNS Yarmook took place at Karachi. In 2017 Pakistan Ministry of Defence signed a contract with a Dutch Ship Manufacturing Company called Damen Shipyard to build two multipurpose OPVs (Offshore patrol vessels), PNS Yarmook is the first one and the second PNS Tabuk is yet under construction. The CNS, Admiral Zafar Mahmood Abbasi while speaking on the occasion stated that this is a significant milestone for the Pakistan Navy as the induction of this vessel will help Pakistan secure its maritime borders and this warship will act as a force multiplier enhancing Pakistan's naval capability.

This newly inducted warship is a state of the art anti-ship, anti-submarine, electronic warfare platform that has a terminal defence system and advanced self-protection. It is also capable of performing various other maritime operations and can transport UAV (Unmanned Air Vehicle) and helicopters simultaneously. In case of any special mission operations, it can accommodate two 20 foot equivalent Units and is also capable of launching two RHIBs (Rigid-Hulled Inflatable Boats) at 6.5 meters and 11.5 meters at the same time. Damen has built about 40 vessels of the security and defence segment in the past which include several sophisticated vessels made for Royal Netherland Navy along with the flagship of Romanian Border Police and the Stefan cel Mare offshore patrol vessel, which shows that it is a highly capable and trustworthy international player for shipbuilding. It is also expected to deliver the second vessel named PNS Tabuk by the end of this year.

Historically, the role of Corvette was fighting minor wars, coastal patrols, and supporting large fleets. During World War II, the modern Corvette was introduced as a convoy escort vessel and easily built patrol. In the late 20th Century the modern navies started a trend of better maneuverability and smaller surface capability. Corvettes measure up to 55-128m (180-420 ft.) in length and have a displacement of 500-3000 tons long. They are armed with surface to air missiles, the surface to surface missiles, small and medium caliber guns and anti-submarine weapons. Modern Corvettes are also capable of accommodating of medium or small anti-submarine helicopters. India's navy currently has four Corvettes of Kamorta class in its inventory. Hence Pakistan has been compelled to follow the same path. The newly inducted Corvette PNS Yarmook, though one in number, but given the limited resources it would likely add up a resort option. In the longer term, this would serve the purpose of enhancing the Pakistan Navy's response capabilities.

With the expansion of the Exclusive Economic Zone (EEZ) of Pakistan about 350 nautical miles away from the coast, the area of responsibilities of the Pakistan Navy has increased. Moreover, with the development of the deep seaport of Gwadar as part of the CPEC (China-Pakistan Economic Corridor), Pakistan is about to become a central trade platform, which India is continuously trying to derail. Unfortunately, India always tries to promulgate that CPEC is not economic cooperation, it is military cooperation. However, it is the right of every state to protect its interests whether they are economic. This has increased India's concerns and has led it to develop more advanced and sophisticated naval buildup. India believes that the development of the Gwadar port will prove hazardous for its interest in Central Asian states. Nonetheless, India's long term dream for the blue water navy and gain control over the Indian Ocean region (IOR) continue to be a source of serious concerns for Pakistan's maritime security. Hence induction of PNS Yarmook will help Pakistan to secure its sea lines and enhance sea-based defense and also to patrol more frequently. These warships will enable Pakistan to counter India's naval developments and vested interest in the IOR more effectively. In the contemporary era, maritime security has a great significance for economic development as it is directly linked with the maritime economy of any state. Given the economic potential of Gwadar deep seaport, the Pakistan navy has to deal with future challenges arising from India. In this regard, PNS Yarmook being a technologically advanced vessel will boost up Pakistan Navy's capabilities to deal with such challenges and to maintain peace and stability in the IOR.

Pakistan Navy apart from protecting Pakistan's maritime frontiers is also conducting peacetime missions such as bathymetry and hydrography. Pakistan has recently inducted PNSV BEHR MASAH to discover the undersea resources by performing oceanographic, hydrographic, and geographical surveys. It is believed that PNS Yarmook and PNS Tabuk along with guiding Pakistan's maritime frontiers will help perform these peacetime missions without any external threats. Other than that, they will add more flexibility in performing regional maritime patrols in IOR and will act as a force multiplier for Pakistan Navy.

https://moderndiplomacy.eu/2020/07/29/pns-yarmook-an-upgrade-for-pakistans-naval-capability/

Foreseeing Cyber Vulnerabilities of Nuclear Facilities in South Asia

Basma Khalil

In this era of rapidly evolving technology, nuclear facilities are exposed to dynamic and evolving spectrum of cyber vulnerabilities. Cyber-attacks on nuclear facilities are a matter of concern and it's not for the first time that a cyber-attack has been carried out. Such as attack on nuclear program of Iran to serve the purpose of espionage, attack on Korean Hydro and Nuclear Power Company (2014) for data theft purposes and also Nuclear Regulatory Commission/U.S. Department of Energy (2016) in which was an intentional attempt by an employee to infect computers of U.S. government and he used spear phishing technique for it. Attack on the Indian nuclear facilities of Kudankulam was informed in September 2019, a malware attack on Kudankulam by the Indian Computer Emergency Response Team. Indian Department of Atomic Energy, investigated the attack and later on confirmed, that only one computer was targeted, connected to the administrative network's internet servers. Later on Nuclear Power Cooperation of India Limited (NPCIL) confirmed that, operational networks at Kudankulam are completely separate from the administrative systems. Recent attack on Iran; July 2, 2020 on its nuclear facility at Nantaz earlier this month, is considered as lethal as Stuxnet attacks and have raised serious concerns about vulnerability of nuclear facilities vis-à-vis cyber security threats. Such type of attacks can cause serious damage to nuclear reactors and can also cause off-site release of harmful radioactive radiations, although there was off-site release of radiations that could create radioactive pollution but states must be careful from cyber in future which could be hazardous.

Rapid advancement in cyber technology can be a blessing and curse at the same time. Because if on one hand it provides with opportunity of innovation in the domain of network centric warfare and added to the cost effectiveness of war related expenditures, but it also pose serious threats which could possibly by dissemination of information, hacking, sabotage, theft and release of important and covert information related to the critical infrastructure whether it's civilian, military or nuclear. International community, these days is facing serious cyber threats to nuclear facilities and has already taking measures by designing technical and legal framework to secure the nuclear facilities from any kind of cyber sabotage and threat. .

In context of South Asia, the region is already exposed to cyber threats and vulnerabilities keeping in view the attack on Kudankulam, although that was administrative breach but with rapid pace of advancement in cyber technology, attacks could also be launched on operational facilities. Cyber technology and security is considered an important pillar of national security and states have already started integrating cyber security policies and

initiatives in their national security frameworks. India has already formulated Cyber Security Policy 2013 and inducted in national security framework but Pakistan has not formulated any policy yet but government has taken different initiatives such as establishing National Centre of Excellence of Cyber Security, PAK-CERT etc. India and Pakistan are involved in cyber space rivalry; both states attack each other and breach security using tools, such as cyber spoofing, spear phishing and denial of data services. Pakistan's digital infrastructure is facing serious cyber security threats from India due to India's increasing cyber security collaboration with Israel. Region is already under the potential hazard of Advance Persistent Threats along with ongoing cyber espionage campaigns. There are no strong international norms framed yet that could legally bind the states against the acquisition and use of cyber technology. States are likely to exploit their cyber capabilities for both low and high-intensity conflicts in the absence of clear international norms or rules of engagement.

States like India are aiming to pursue the development of cyber weapons which can offset disadvantages in conventional warfare. Hence use of cyber weapons and attacks can cause the serious damages as cyber weapons are offensive in nature because states will may not be able absorb the attack or if inn case state absorb the attack, may not be able to respond in a significant way. Different tools used by malevolent actors can endanger the nuclear facilities, ranging from network based attacks, packet sniffing, cyber-spoofing, radio attacks, crypto attacks, spyware attacks and air-gapped network attacks which increase the intensity of damage. The potential use of offensive cyber operations using such tools will exploit the vulnerabilities exist in nuclear infrastructure and of systems will increase the possibility of war in the future could cause serious damages to nuclear facilities region.

In South Asia, situation may lead to strategic imbalance as India is already aiming to acquire the cyber weapons. Admiral Suresh Mehta, former Indian Naval Chief in an interview to Start Post admitted that Indian armed forces have invested a lot on network based operations; both in single and in a joint fashion and India cannot afford cyber vulnerability. Information Technology is India's strength and it would be in its interest to invest in developing a formidable 'offensive' and 'defensive' cyber warfare capability. Keeping in view the Indian ambitions Pakistan cannot remain silent so Pakistan has also started acquiring and developing cyber tools and techniques to deal with any future consequences. Pakistan has a multilayered defense for the entire spectrum of any nuclear security threat – insider, outsider, and cyber threats which work on the principle of Five Ds, that is, to deter, detect, delay, defend, and destroy.

However the level of damage that could be inflicted by cyber-attacks and operations may adversely impact the deterrence stability of the region According to McConnell there are four elements that are essential for achieving cyber deterrence which include 'attribution' that enables states to guess about who carried out the attack, 'location' from where the attack was

launched 'response' the capability to absorb an attack and retaliate and 'transparency' which explains about the knowledge of enemy's capability. Due to the complex nature of cyber technology it seems difficult to achieve all the essential of the cyber deterrence. In global context as well as South Asia establishing cyber deterrence seems to be a bit difficult. If in case any of the operations is carried out against nuclear facilities, it may take long time to reach the base of the network or malware technique that how it was used and from where attack was launched and who were the involved actors.

The scenario of global security and strategic balance in South Asia has been changed with advent of cyber tools technology. Nevertheless, recent attacks on nuclear facilities demonstrate an inconsistent approach towards ensuring cyber security. Although the international community is making efforts through various workshops, training and reports and insisted upon collaboration in the cyber security of nuclear facilities. As far as the cyber deterrence is concerned, South Asian states may require a little more effort and time to fulfill the essentials of deterrence.

https://moderndiplomacy.eu/2020/07/29/foreseeing-cyber-vulnerabilities-of-nuclear-facilities-in-south-asia/

75th Anniversary of Trinity Nuclear Test & Possible Resumption of Nuclear Testing

Hanana Zarrar

Trinity test untethered the nuclear demon with potential apocalyptic power. According to United States, 1945's Japan needed a psychological shock strong enough to make it <u>surrender unconditionally</u> at the cost of putting future generations on the verge of irreversible calamity. The uncertainty attached with these nuclear tests remain unpredictable even after 75 years with two devastating nuclear attacks, crises like Cuban missile crisis, and more than 2000 nuclear explosive tests. Although nuclear non-proliferation and arms control has a predominant place in nuclear realm to contain the unleashed demon with consequential threats, yet nuclear testing remained a practiced phenomenon.

Trinity test took place under strained circumstances, war pressure and complete uncertainty of results. The uncalculated risks taken at the time of first explosion and unsatisfying anti-radioactive measures following the tests were strong enough to convince the administrative and decision-making body to realize the emerging challenges in the wake of nuclear weapon discovery. Scientist are always afraid of being accused of providing mass destructive means to nations. The committee headed by German scientist James Frank issued the <u>Frank Report</u>, that attempted to first demonstrate the power of the weapons to members of the United Nations. Yet, there were no signs of reconsideration of retreating from use of nuclear bomb and begin with pure deterrence with just a warning of use of nukes. It was due to the fact that Truman wanted to end the war soon and maybe because Japan seemed to be stubborn enough to consider the warning.

United States reserves the pride of being an initiator nuclear weapon state with the legacy of conducting more than half of up-till-date global nuclear device tests. U.S. nuclear testing practice is on a hold since 1992 as a result of nuclear test ban treaty. Recently, U.S. officials alarmed the world with possibility of resuming nuclear weapon tests. The reasons behind are less technical -checking the reliability of nuclear stockpiles- and more political in nature. It is surely another psychological shock from the United States, this time not for any single war mongering state but the whole world.

The assumption that the U.S.' proposed trilateral arms control initiative would get a strong base to get into reality, through the imposed political pressure on other major nuclear powers, is a mere credulity. Threat of resuming nuclear testing adds to the mistrust among the nuclear weapon states. Following U.S. footsteps, the allied nuclear weapon states could take up the same course, putting rival nations in security dilemma and the domino effect would emerge. It would further devalue the already waning and uncertain future arms control

accords. The clear clash of security interests is likely to emerge as a result of United States re-testing while compelling others to follow the course. Resumption of nuclear testing by all existing nuclear weapon states would be resulting in the filling up of nuclear weapons knowledge gap that existed all long the decades providing U.S. with the edge over other nuclear weapon states.

United States needs to address the fact that as a pioneer nuclear weapon state, it is being followed by both, the competitor and friendly nuclear weapon states in its policies and nuclear strategies. Russia and China, as a result, would get more reluctant towards any trilateral approach regarding nuclear arms in near future. In emerging multipolar world post-Covid-19 crisis and potential threats of future crises situation, nuclear testing would stand as an inevitable threat. The decision of resuming nuclear testing would bring about a whole new development in nuclear realm with further weakening of the disarmament cause.

https://moderndiplomacy.eu/2020/07/29/75th-anniversary-of-trinity-nuclear-test-possible-resumption-of-nuclear-testing/

Cyber ASAT Capabilities and South Asia

Ahyousha Khan

Since the launch of the first satellite in 1957, humanity has been using outer space for the purpose of intelligence, surveillance, reconnaissance, communication, monitoring, global positioning and navigation. Military and strategic usage of outer space has provided states with the ability to have early warning systems, effective nuclear command, control and communication (NC3) and strategic intelligence. Space based systems are important for states and militaries because they ensure the availability of information and data to all other services (land, air and water). Therefore, space is an ultimate high ground for the information warfare for nearly 70 years. The end of the Cold War, and the beginning of the multi-polarity and effective display of space capabilities as force multipliers during the "Operation Desert Storm" brought many states into the race of space control and power.

Today 50 countries are operating more than 1,950 satellites in outer space, which includes 846 commercial, 302 military, 385 government, 145 civilian and 279 mixed usage satellites. Satellites are light weight objects, moving at extreme speeds, a marble size object hitting it in space would cause a satellite irrefutable damage. Hence, these strategically important assets in space are at extreme odds with different kinds of vulnerabilities. Due to emerging technologies, hostilities and competition among states, most of the vulnerabilities to space assets are man-made. These threats/vulnerabilities are not shocking for states, as a US Space Command publication in 1997 stated that considering the importance of space systems in military operations, it is unrealistic to imagine that they will never become a target.

The ability to target satellites in outer-space is also known as "counter-space capabilities" or "anti-satellite weapon systems". Counter-space capabilities are defined as military capabilities that seek to prevent an adversary from exploiting space to their advantage and enable a state to have a desired degree of space superiority by the destruction or neutralization of enemy forces. Today under the imperatives of their national security concerns states are more inclined towards the usage of counter-space capabilities. Although, these technologies were present during the Cold War, today states are using them to manifest their hostilities towards each other.

ASATs or counter space capabilities are generally kinetic or non-kinetic with capability to target from Earth to Space, Space to Space or Space to Earth. Kinetic ASAT capabilities are visible and difficult to hide. Since 2007, different states have shown the ability to conduct kinetic ASAT missile tests by destroying their own satellites, which resultantly left huge debris in outer-space.

However, non-kinetic (physical and non-physical) counter-space technologies are also flourishing, which include orbital threats, electromagnetic pulses, electronic warfare and laser beams. According to open-source reporting, space-faring states are developing non-kinetic counter-space technologies against each other. Examples of such incidents include the reports on the US capability to jam Global Navigation Satellite Systems (GNSS) like GLONASS or Beidou in a small restricted area of operation. China also reportedly successfully blinded satellites in 2005 and 2006. In 2011, Iran also displayed its counter-space electronic warfare capabilities by destroying the US RQ-170 UAV, this claim was not confirmed by the US. Russia has also invested in electronic space capabilities such as ongoing development of electronic warfare capable aircraft to disable enemy communication and navigation, and has already developed laser based ASAT on the A-60 aircraft and designated jammers known as R-330ZH and R-381T2.

Cyber-ASAT is another counter-space capability that can be very damaging for space assets. Space satellite systems are made-up of complex and inter-mingled cyber systems, which comprises of hardware, software and digital component. Just like any physical attack on space based assets, cyber-attacks also have the capability to undermine deterrence and cause massive damage, uncertainty and confusion. During a hearing, a US military official went on record and stated that cyber threats are the "no.1 counter-space threat".

According to the Consultative Committee for Space Data Systems most common counter-space cyber threats to the space segment, ground segment and space link communication segment are unauthorized accesses, spoofing, replaying, software threats, data corruption/modification, ground system loss, interception of data and insider threats due to social engineering. However, in extreme cases cyber-ASAT can completely control and destroy satellite, or some vital part of its operation and structure. A chance of a cyber-attack happening to any space asset is way more than any kinetic hit, as cyber-attacks are widely accessible, cost-effective, and can be deployed more easily, provide easy deniability and are difficult to attribute.

On the top of this, cyber-ASAT are challenging to states because they happen at a relatively faster speed, and without any warning. Moreover, these threats have the capability to hide in plain sight till the critical moment. Due to the interdependence among the systems, whether they are civilian, military or strategic, a cyber-attack on any satellite could adversely affect the communication, navigation, integrity of military operation and NC3 system of state.

Cyber-ASATs are not some distant realities or a far-fetched idea, they are actually happening, and states are blaming each other for such attacks. Almost 10 years ago the US issued a report titled "US-China Economic and Security Review Commission Report", which stated that two of the US satellites were compromised in 2007 and 2008 via a cyber-attack. The attack was regarded as alarming because hackers managed to complete all the steps required

to command the satellite, which means the hackers might have stolen the data and damaged the satellite.

Cyber-attacks on satellites can cause serious issues, if they tend to happen between neighboring hostile nuclear states. South Asia is a region where intense military modernization is taking place at a rapid speed between India and Pakistan. India has an advanced space program in comparison to Pakistan's space program. However, a significant factor in this regard is that due to its ambitious foreign policy, India aspires to be a global power, which puts India face to face with China. Both countries have also fought a war on 2,100 miles long disputed border in Himalayas. Therefore, India most likely would try to acquire technological sophistication to ensure that its space assets would not remain vulnerable to Chinese counter-space cyber-attacks.

India is expanding its space program very effectively and rapidly, this growth at the same time will increases the vulnerability of its systems to cyber-attacks. This need is well realized within the Indian policy circles and policy initiatives such as establishment of units to handle space and cyber warfare are undergoing. The cyber unit would be responsible for sharpening offensive capabilities, while space warfare unit would be responsible for protecting Indian space assets.

Moreover, India and Japan have decided to cooperate in the area of cyber security and outer space in the backdrop of growing cyber terrorism and India's successful ASAT test. Moreover, in 2019 India conducted a successful ASAT missile test in lower earth orbit. These developments show that India wants to acquire ASAT capabilities and offensive cyber capabilities, which if joined together becomes a classic counter-force cyber capability.

The focus of Indian policy makers towards cyber security is relatively new, which makes its military systems prone to cyber-attacks. Like its neighbor, Pakistan is also working to make itself more digital and secure its cyber systems. The space program of the country is at a nascent stage and most of the space satellites are launched with the help of other countries, mostly China.

To advance its space program Space Program 2040 was launched by Pakistan which includes points like establishment of ground stations and ancillary facilities for reception and use of data, establishment of satellite tracking facilities, launching of multipurpose satellites and development of satellites and satellite launch vehicles. Like India, not much is known about the extent of Pakistan's offensive and defensive cyber capabilities. Pakistan has not formulated a National Cyber Security Strategy, though it was presented to National Assembly of Pakistan in 2013.

Most of the reported attacks between India and Pakistan are of website hijackings; however it would be unrealistic to believe that no other attempts are made or in a future

conflict/crisis situation both states will not retort to offensive cyber capabilities towards each other. In any such moment a cyber-attack on any satellite to corrupt or modify the data or complete acquisition and destruction of satellite would severely undermine the existing deterrence by creating confusion and uncertainty.

Due to increasingly blurring lines between peace and war time use of cyber-ASAT, both countries need to develop the resilience and security in their respective civilian, military and strategic systems. With the ongoing hostilities, it seems impossible that both countries might go for any confidence building measure in the near future. Thus, it is necessary that both states strengthen their systems and make some rules of engagement in this highly vague domain to avoid any major catastrophe.

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