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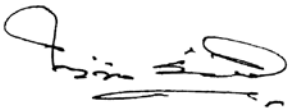
CONTENTS

EDITOR'S NOTE

This journal is now more than one year old. We are grateful to our readership for the enormously encouraging response to the fledgling journal, especially since most of the articles are contributed by in-house scholars, covering serious research articles across a wide horizon. What has been common to all these pieces is that they, in some way or the other, are related to India's national security. We hope to continue the current trend strengthened by the deeply satisfying conclusion that these are being received well. I would like to take this opportunity to suggest that we would be happy to receive articles from younger air warriors on future-oriented policy-related themes that do not cross the boundaries of security.

Globalisation has finally caught up with the economic health of major powers and even the Chinese growth has come down significantly. With India's traditional markets facing a serious debt burden, the situation is not likely to improve in the short term. It was inevitable that the Indian economy would start to face the adverse effects of globalised economic linkages. Hence, the inevitable need for greater austerity. On the other hand, recent events have once again highlighted the critical need to ensure that we pay serious attention to the nation's core values — the critical second pillar on which national security has been constructed. While every one of us, and our communities may opt to pursue our own respective value system, the national core values remain cast in stone on the very first page of the Indian Constitution. When these values are ignored or violated, our national security is bound to be adversely affected. As we come to the close of the year,

we need to reflect on this basic issue, often taken for granted. The armed forces take an oath to uphold and protect the Constitution; hence, they must carry the greater burden of ensuring that the core values are propagated, sustained and protected.



CHINA'S LEADERSHIP CHANGES: SOME IMPLICATIONS FOR THE REGION

JASJIT SINGH

Two months after the 18th Party Congress, the contours of the Chinese leadership and their policy trends are beginning to be identifiable. This, of course, must be viewed in the context of the complexities of the People's Republic of China (PRC), and the broader politico-economic situation confronting it. Western commentaries are essentially focussed on the question of whether and to what extent the PRC would introduce reforms — political as well as economic? The latter has been going on since the modernisation started more than four decades ago though political reforms are a precondition to full economic reforms, defined in the West as a free market economy. But even in a hybrid economy where the rule of law is applied, if at all, rather arbitrarily, the Chinese economy — better described as an "opportunistic" economy — has been growing at double digit rates for more than three decades, making its Gross Domestic Product (GDP) today the second largest in the world, next only to the United States. But the global economic meltdown since 2008 may have affected China more than is generally perceived. With rampant corruption and a demographic challenge

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looming on the horizon, restoring economic health appears to be the predominant priority for the new leadership rather than political reforms toward democracy *et al*.

What strikes the observer of the leadership changes is that contrary to the previous practices, the new leadership headed by Secretary General Xi Jinping has reduced the size of the Chinese Communist Party (CCP) Politburo Standing Committee from nine members to seven, thus, making the apex ruling group smaller, tighter and possibly more cohesive. One member dropped is the Political-Legal Committee Secretary presiding over a massive US $ 110 billion [more than the People's Liberation Army (PLA) budget] internal security budget, and the new incumbent will at best be only a Politburo member. At the same time, outgoing President Hu Jintao will not stay on for a year or two as the CMC (Central Military Commission) Chairman (a practice since Deng Xiaoping's retirement) leaving the slate clear for the new CMC and Xi Jinping. At the same time, it appears that changes in ministerial structures (reducing the 44 ministerial positions to 24 odd) also include placing the Ministry of State Security — the civilian internal and external intelligence services — under the State Council. This could have a significant effect on China's intelligence apparatus in the future.

DEMOGRAPHIC CHALLENGE AND ECONOMIC GROWTH RATE

The demographic challenge is, no doubt, a long-term phenomenon, but, according to some experts, its impact is already beginning to tell. China's "One-Child Policy" which prevented 400 million births, reducing the population growth, is now starting an *irreversible trend* of reducing the working age proportion in the population while a bulge in the old age group is beginning to grow.[1] Glen Goddard compares the nearly identical Japanese demographics of 1990 (and 2010) to the Chinese population bulge in 2010 (and 2050) to emphasise the importance of the Japanese experience of a stagnant economic growth (now hovering around zero since 1990) after its spectacular growth from 1960 to 1990.[2] The downward trend coincides with the drop-off in the working age

1. This is where India stands to gain in the coming decades provided it can educate its millions to being citizens of the third major power after the US and PRC in material terms.
2. Glenn A. Goddard, "Chinese Algebra: Understanding the Coming Changes of the Modern Chinese State", *Parameters,* Summer 2012, pp. 16-27.

population which is a likely factor in the economic decline due to a lower-wage, young population transforming to a higher-wage mature population and, finally, to a no-wage-higher-cost elderly population.

If this is compared with China's double-digit growth from 1980 to 2000 and reducing to less than 10 percent after 2008, and if we factor in the likely drop in its working age population starting 2015, the similarities of the trend lines are apparent. A closer look at economic growth data provides an even more sombre picture. After the 2008 economic meltdown, most countries had to inject stimulus into their economies. According to a Heritage Foundation study, China created its own stimulus package during the same period, injecting nearly US$ 400 billion into the economy, and the State Banks created $1.4 trillion in new loans.[3] This was, no doubt, done to create more jobs at the risk of increasing inflation which hit 6.9 percent in end 2009, reducing to 3.6 percent in early 2012. With the growth slowing down to 7.5 percent, this implies real GDP growth of a mere 3.9 percent, far below the average for the previous three decades.

The demographic changes would lead from now on to a dwindling pool of younger persons though better educated than those after the Cultural Revolution's purges. The majority of the more capable youth are likely to seek jobs in the lucrative private industry instead of the military. This is why Beijing had doubled the salary of new recruits in 2009 to US$ 133 per month in order to make the military service attractive, at least for conscripts. According to *The Economist*, even in the private industry sector, wages were going up at an average of 12-14 percent per year in dollar terms in the manufacturing sectors in Shanghai and Guangdong during the last decade.[4] As the labour market tightens due to the demographic deficit, while overall population keeps increasing, the wages are only going to increase at a faster rate. As workers' wages increase in the coming decades, they will eventually price themselves out. China's options for the future are to start organising manufacturing where labour costs are low and China could still gain by increasing low-cost manufacturing. Only India offers such an advantage, especially on a large scale before China's high labour costs start to negatively impact on its exports to the US and Europe.

3. Derek Scissors, "China's Economy: Something is Not Right in Beijing" The Heritage Foundation, Washington DC, *Web Memo No. 2775*, January 25, 2010.
4. "The End of Cheap China," *The Economist*, March 10, 2012.

China will require large numbers of unskilled labour, of which it still has in a couple of hundred millions to meet domestic needs. But this category would be progressively less capable due to ageing, yet requiring support from the family and/or state. Add other malaise like corruption at high levels (Xi Jinping's first public statement highlighted this even in the PLA), ostentatious expenditure by senior leaders, costs of extensive VIP security and other non-productive elements of the economy like the "gray" (meaning black) money in the economy, and the challenges for the new leadership are fairly clear. Former General Secretary Hu Jintao had referred to curbing corruption as "a matter of life and death for the Party and state." Xi Jinping set a personal example to highlight the new austerity measures by going around with his colleagues and staff during his southern visit in mini-buses and with virtually no security staff. But little progress is seen even regarding the relatively limited objective of building viable institutions to curb corruption; Beijing seems to be content with the symbolism of Bo Xilai, the former Politburo member, who was tipped to head the new government, being put on trial for corruption. It is almost certain that he will be convicted and punished so that the new government can put substance in its claim to eradicate corruption, especially graft at high levels.

GEO-STRATEGIC CHALLENGES

One of the most important challenges in foreign policy that the new leadership faces is what role China should play on the global stage as its power and influence continue to grow? The then-Deputy Secretary of State Robert Zoellick's famous speech in September 2005 about China as a "responsible stakeholder" in the global arena has been triggering significant responses in China. However, most of them are happy about the recognition of China as a great power, but tend to rely heavily on what has been termed as the "developing country reality." Beijing's September White Paper, *China's Peaceful Development,* argues that China is actually living up to its international responsibility and observes that the level of responsibility requires careful and accurate assessment. The nature and extent of its responsibility is limited by China's domestic challenges and its current stage of development. It specifically defines that by emphasising, "For China, the most

populous developing country, to run itself is the most important fulfilment of its international responsibility." Indian strategists, foreign policy experts, and the media should pay close attention to the formulations which also suggest China's willingness to bear greater international responsibility in consonance with its growing power.

The years before and since 2008 have not only been difficult for economic growth, but there are fundamental changes taking place in the geo-strategic environment in Asia that affect the sole superpower as well as the second (China) and the third (India). One is the US plans for rebalancing its strategic posture based on a military strategy of "Air-Sea Battle." While these are yet to be adequately defined and understood, it is clear that they aim to confront China on both the Pacific front as well as the Western side where the US aims to withdraw from Afghanistan by end 2014, but will clearly leave behind a force of up to 20,000 troops, some for security of the regime, some for training the Afghan forces, and a significant element of air power [UAVs (Unmanned Aerial Vehicles) especially armed UAVs, etc.] besides the combat air power deployed on aircraft carriers in the Arabian Sea. A smaller proportion of the North Atlantic Treaty Organisation (NATO) forces are also likely to remain for training purposes. China has already made its intentions (to play an active role in sync with Pakistan) clear by the proposal to invest in mining in Afghanistan.

The US military has already negotiated basing rights in north Australia and is negotiating a return to the Philippines bases. The central objective of the US strategy appears to be to send a clear signal to China on one side that it would not allow it a free run in its own neighbourhood, and to the US allies and friends in the region, on the other, that it remains committed to supporting them in all aspects.

"REBALANCING" OR THE NEW GREAT GAME?

Basically, it appears that during 2012, the Obama Administration, before and after the Presidential election had decided to once more change the US strategy toward China — this time to restrain China instead of accommodate it.[5] China's responses are typical of its strategy of indirect approach, and could easily have been foreseen.

5. Peter Lee, "China Checks the US Picket Line," *Asia Times*, December 22, 2012, at www.atimes.com/atimes/China/NL22Ad03.html

Instead of a head-on confrontation, China in recent months has been rebalancing its own foreign policy and has focussed on smaller nations to win them over to its side. Obviously, the new leadership was part of the system that initiated that strategy and is likely to give it a greater push. Hence, China's renewed focus on closer relations with Nepal, Bhutan, Sri Lanka, Maldives and other island states in the Indian Ocean like Seychelles, Mauritius, Maldives, etc. It has invested large sums in Afghanistan for mining valuable minerals besides the political signal it sends to indicate that China will have to be taken into account when post-ISAF (International Security Assistance Force) arrangements are made.

Russia is not standing out. It has already responded by concluding an agreement with Tajikistan to station the Russian Army on its borders with Afghanistan and place an air base at the disposal of Moscow. China has so far remained unmoved with respect to changes that have been triggered in Myanmar since the latter depends upon China for economic and military assistance, besides trade. China can always create problems if Yangon strays too far from the Chinese picket line. All this may be part of China's "rebalancing" strategy to counter that of the United States, but it has a direct and negative impact on India's vital interests. We should also look out for the Chinese surrogate —Pakistan — not only supporting China's rebalancing, but also projecting its own ideological and political interests by its own rebalancing based on Muslim populated island territories in the Indian Ocean.

At the same time, China has been furiously modernising its military forces and aims to equal the military power of the United States in the coming decades. The last may not be easy to achieve in the foreseeable time-frame. But China has focussed on asymmetric capabilities like ASAT (Anti-Satellite), cyber warfare, MaRVs (Manoeuvrable Reentry Vehicles on ballistic missiles), MIRVs (Manoeuvrable Independently Targeted Reentry Vehicles) and highly accurate IRBMs (Intermediate Range Ballistic Missiles) usable with conventional warheads (also termed "carrier killers") in its strategy known as "anti-access and area-denial" (A2/AD) to target US aircraft carrier battle groups coming across its declared picket lines in the Pacific Ocean, too close

to intervene or impact on Chinese interests and capabilities.[6] In a slightly longer term, the US is seriously pursuing its prompt global strike strategy to be able to hit a target accurately anywhere on the globe in less than one hour.

Meanwhile, the heads of state/government of the Association of Southeast Asian Nations (ASEAN) and India met on December 20, 2012, in New Delhi to commemorate the 20th anniversary of the ASEAN-India Dialogue Relations under the theme of "ASEAN-India Partnership for Peace and Shared Prosperity" and declared that this partnership "stands elevated to a strategic partnership." This would be achieved "across the whole spectrum of political and security, economic, socio-cultural and development cooperation, through further strengthening of relevant institutional mechanisms and broadening of the network between government institutions, parliamentarians, business circles, scientists, think-tanks, media, youth and other stakeholders, for the building of a peaceful, harmonious, caring and sharing community in our regions." Among a range of political and security cooperation goals (besides those in other areas) the Commemorative Summit noted in specific the goal *"to promote defence and military exchanges and cooperation …"* (emphasis added). This Vision Statement of the ASEAN-India Commemorative Summit, laying out a comprehensive roadmap for future cooperation, provides an added salience to the developments in the broader region.

CHINA'S MILITARY LEADERSHIP

As noted earlier, China has been rapidly modernising its military to be able to fight and win a local border war with high-technological informationisation. Its *White Paper on National Defense 2004* had clearly indicated its military strategy as follows:[7]

> While continuing to attach importance to the building of the Army, the PLA gives priority to the building of the Navy, Air Force and Second Artillery Force to seek balanced development of the combat

6. For an examination of these strategies and capabilities, see Jasjit Singh, "China's New Missiles Pose Unbeatable Threats", *Defence and Diplomacy*, July-September 2012, vol. 1, no. 4, pp. 1-12.
7. *White Paper* on *China's National Defense 2004*, "Strengthening the Navy, Air Force and Second Artillery Forces" in Chapter III: Revolution in Military Affairs and Chinese Characteristics, *China Daily*, December 28, 2004.

> force structure, *in order to strengthen the capabilities for winning both command of the sea and command of the air, and conducting strategic counter-strikes* (emphasis added).

The CMC (Central Military Commission) is the "supreme command" which takes decisions on peace and war and the development of the military for future operational tasks according to the objectives laid down. The CMC, functioning directly under the Chairmanship of the General Secretary (Xi Jinping now) has two military officers as Vice-Chairmen. Overall, the CMC functions as a collegiate body in matters military, including the nuclear forces, directly chaired by Xi Jinping, the Secretary General of the CCP and to-be President of China in March 2013 (see Table 1). In a way, this is no different from the British system till 1958 when the Prime Minister (with a General as military advisory staff) used to chair the meetings of the Chiefs of Staff Committee (which later was delegated to the Defence Minister). Obviously, the authoritative PRC does not believe in "single point advice" on military matters.

Table 1: CMC Composition (October 2012)

Organisation	PLA Army	PLA Navy	PLA Air Force	Second Artillery
CMC (10+Xi Jinping)	6	1	2	1

Source: Cristina Garafola, "PLA Succession: Trends and Surprises," *China Brief*, Jamestown Foundation, vol. XII, issue 24, December 14, 2012, p. 15.

The larger presence of the PLA Air Force and Navy in the CMC is a recent development and is consonant with the national defence strategy defined in the 2004 *White Paper on National Defense*[8] noted above, acknowledging the increasing role of air power and strategic forces in the future.

The CMC is theoretically elected by the approximately 200 members of the CCP's Central Committee; but, in practice the outgoing CMC and the top Party leaders have a major say in the process. The continuing domination of the ground forces among the military Services is apparent, although the air force and navy have managed

8. Ibid.

to occupy some crucial positions. For example, Gen Xu Quilang, and the first air force officer to be appointed to the CMC, is now the first Vice Chairman who also wears his air force uniform in the CMC. But the army applied its own pressures and ensured that Army Gen Fan Changlong was promoted by skipping two steps in the criteria as the senior of the two Vice Chairmen.

As may be seen from the top level posts in the PLA, the army still maintains its dominant position although it is not certain that this will not change, even if slowly (see Table 2). All the seven Military Regions commanders belong to the ground forces though it is believed that the air force commander and commander of the navy in the Military Regions exercise a fair amount of autonomy in deciding air force and naval matters. Interestingly, the new CMC Vice Chairmen and members assumed their positions during the last session of the 17th Party Congress in October 2012 rather than the first session of the 18th Party Congress in November.

Table 2: Personnel Appointments in PLA Institutions below the CMC (by Service and Branch)

Organisation	**PLA Army**	**PLA Navy**	**PLA Air Force**	**Second Artillery**
General Staff Department Deputies (Varies between 4-6)	4	1	--	--
General Political Department Deputies (usually 4, current 3)	3	-	-	-
General Logistics Department Deputies (3)	3	-	-	-
General Armament Department Deputies (5)	5	-	-	-
Minister of Defence	1	-	-	-
Academy of Military Sciences Commandant and Political Commissar (2)	1	-	1	-
National Defence University Commandant and Political Commissar (2)	1	-	1	-
Military Region Commanders (7)	7	-	-	-

Source: Cristina Garafola, "PLA Succession: Trends and Surprises," *China Brief*, Jamestown Foundation, vol. XII, issue 24, December 14, 2012, p. 15.

CONCLUSION

Less than a month into his new job as the leader of the second most powerful country, Xi Jinping ushered in a new "hands-on" leadership style that has taken China by surprise and its neighbours with some concerns.[9] He exhorted the Chinese to pursue a "Great China Dream" and "national rejuvenation" and seemed positioned to break with the past decade of stagnation during which the Chinese economy slowed down and the people's protests increased, not to talk of rampant corruption. The government is about to be restructured down to 24 ministries from the current 44. Correcting this as early as possible would be good for Asia and the world. But concerns are already growing about the possibility of an increasingly nationalistic and aggressive foreign policy. There is little doubt that we will be living in interesting times sooner rather than later.

9. Melinda Liu, "China's Great Dream," *Newsweek*, at http://www.thedailybeast.com/newsweek/2012/12/30/china-s-great-dream.html

INDO-VIETNAM RELATIONS: EXPLORING COLLABORATION IN CHINA'S BACKWATERS

A.V. CHANDRASEKARAN

INTRODUCTION

Although India and Vietnam, do not share borders, they enjoy a stronger bond with each other than they do with many of their geographical neighbours. The foundation to this enduring relationship was laid by Pandit Jawaharlal Nehru, India's first Prime Minister as early as 1954. The good relations were further cemented by Smt. Indira Gandhi, India's third Prime Minister, when India as a member of the International Commission of Control and Supervision (ICC) for Vietnam, voiced serious concerns over the arbitrary American air strikes and bombings, and pressed for their immediate end. Another binding aspect to this relationship is their common mistrust of China that lectures on a multipolar power order but seeks to achieve unipolarity in Asia. China's misadventures with India in 1962 and with Vietnam in 1979 are deeply etched in the memories of both countries. India's support to Vietnam during the Vietnam War and during its invasion and occupation of Cambodia in the 1980s came at a high political cost, injecting bitterness into Delhi's difficult relationship with Washington. However, India considered its equations with Vietnam more important and, in return, Vietnam

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supported India in its conflicts with Pakistan, and was one of the first countries in the world to recognise the newly independent Bangladesh in 1971.

AREAS OF COMMON INTEREST

The abrupt disintegration of the Soviet Union into fragmented republics at the end of the Cold War had an enormous impact on both countries. Almost overnight, both Hanoi and Delhi lost their most reliable strategic ally in Asia. Both countries had to adapt to this new reality, experiencing a new power shift in their backyards, and immediately started formulating their foreign policies to meet this new challenge. Thus, dawned a new era in the Indo-Vietnam relationship which can be rightly termed as the "Coalition of the Willing". The end of Vietnam's occupation of Cambodia facilitated its integration into the Association of Southeast Asian Nations (ASEAN) in 1995, and in 1992, India launched what it termed its "Look East Policy", which heralded a new era of engagement, both diplomatic and economic, with the Southeast Asian nations.

The key identified areas for stepping up cooperation were capacity-building, technical assistance and information-sharing to ensure the safety and security of the vital Sea Lines of Communication (SLOC), including combating piracy, preventing pollution, and conducting search and rescue at sea.[1] Since 1998, both countries have, thus, been steadily strengthening their ties, be it on the military or diplomatic front. Vietnam has come out in support of India's bid for a permanent seat at the United Nations Security Council (UNSC), had lobbied in favour of India's presence at the first East Asian Summit in 2005, and helped block Pakistan's inclusion in the ASEAN Regional Forum (ARF). India, in return, was in favour of Vietnam's accession to the World Trade Organisation (WTO), and helped it secure a temporary seat at the UNSC in 2007. Bilateral trade has also grown exponentially and is likely to touch $ 5 billion in 2012.

1. Monika Chansoria, "India Looks East, Discovers a Strategic Partner in Vietnam", *The Sunday Guardian*, November 01, 2011.

CHINA'S HEGEMONIC DESIGNS

Historically, China was a dominant power in East Asia for thousands of years and considered lesser powers as its vassal states. Consequently, China lays traditional and historical claims to the entire South China Sea and blatantly disregards the claims made by the Southeast Asian countries that base their stand on the provisions of the Law of the Sea. China, however, is taking the position that its sovereignty over the territories concerned precedes the enactment of the Law of the Sea, and so the law doesn't apply. History trumps law.

Four ASEAN states, Brunei, Malaysia, the Philippines and Vietnam, claim parts of this maritime area, claims based on the application of the United Nations Charter on the Law of the Sea (UNCLOS). Though quick to claim its UNCLOS rights when that suits it, China treats the charter as irrelevant in respect of its "irrefutable jurisdiction" over the South China Sea. One sees a similar Chinese "assertiveness" in dealing with boundary issues with India. Not only is claim being laid to the entire state of Arunachal Pradesh, but China is now alluding to the length of the Sino-Indian border as 2,000 km instead of the actual length of 3,488 km, thereby excluding its borders in the western sector with Jammu and Kashmir (J&K) from the ambit of differences over the Sino-Indian border. The Chinese way of thinking emphasises their strong sense of civilisational history, geography and unity, but conveniently tends to forget their ancient misgivings.

The Nationalist Chinese government in 1947 produced a map showing nine dashes or hash marks that form a U shape around all the islands of the South China Sea, including the Paracel and Spratly Islands. Some of these dashes lie close to the coasts of Vietnam, Malaysia and the Philippines.[2] The result is the emergence and continuation of serious sea territory conflicts between China, on the one hand, and the East Asian nations, on the other. To buttress its claim, China is projecting its force and this is causing fear in countries like Vietnam, the Philippines, etc. It would be rather absurd if England were to claim sovereignty over most of the English Channel, Iran of the Persian Gulf, Thailand of the Gulf of Thailand, Vietnam of the Gulf of Tonkin, Japan of the Sea of Japan, or Mexico of the Gulf of Mexico.

2. Michael D. Swaine and M. Taylor Fravel, "Chinese Assertive Behaviour: The Maritime Periphery," *China Leadership Monitor*, No. 35 (Hoover Publications, 2011).

OPTIONS FOR INDIA

One could draw a parallel between the current Indo-Vietnam relations vis-à-vis China and the Sino-Pak relationship vis-à-vis India. Replace Vietnam with Pakistan and the Chinese unease about expanding Indo-Vietnam relations begins to resemble India's disquiet about the burgeoning Sino-Pakistan alliance. Also, China stepping up its involvement in the disputed part of Kashmir, that includes the Karakoram Highway upgradation project, the rail-link from Havellian and Khujerab, and various telecom projects in Gilgit and Baltistan, is a cause of concern for the Indian establishment. Interestingly, Vietnam presents a unique strategic option for Delhi to make Beijing comprehend the depth of Indian feelings about China's ties with Pakistan. The parallel is almost complete insofar as there is a lot of empathy that India would evoke from other Southeast Asian countries involved in the South China Sea dispute—and from Japan—just as China does in the South Asian region among the small countries surrounding India with which India has had difficult relationships. Over and above, China's expanding interests in the Indian Ocean region are of such far-reaching consequences to its global strategies that it will be hard-pressed to curb them in order to accommodate the Indian sensitivities, thereby providing India a legitimate alibi to increase its presence in the South China Sea.[3]

THE PATH AHEAD

India needs to play an active role in building an inclusive security architecture in the South China Sea and across the Asia-Pacific. It is only natural that India and Vietnam, both wary of China's perceived superiority, find confluence to create a strategic alliance to counter the bullying dragon. India's "Look East" policy, originated by Prime Minister (PM) Narasimha Rao, was a visionary policy and has paved the way to progress this far. Vietnam has been regarded as a pillar in this policy. India, consequently, today stands economically and politically integrated with ASEAN/Southeast Asia and the East Asia Summit (EAS). The "Strategic Partnership" between New Delhi and Hanoi has displayed significant progress both in the realms of trade

3. Prokhor Tebin, "South China Sea: A New Geopolitical Node", *Asia Times Online*, October 14, 2011.

and investment, and defence and security. India figures among the 10 largest exporters to Vietnam, with bilateral trade exceeding $ 3 billion in 2011. There are certain areas where India and Vietnam can have meaningful exchanges and partnerships.

DEFENCE COOPERATION

Vietnam, till now, has not embarked upon a modernisation programme for its armed forces due to low budgetary allocations and also a resource crunch. It is only recently that Vietnam appears to have commenced a process of selective modernisation of its armed forces, taking into consideration the new threat perceptions. Vietnam now may have to shift its focus to the envisaged maritime and aerial warfare threats. Though its ground forces are large enough to deter aggression,[4] they need modernisation and advanced equipment. Details of India's commitments to Vietnam in the defence and security fields are enumerated in the 15-point Defence Assistance Agreement committed by Defence Minister George Fernandes in 2000, which promised to provide Vietnam with assistance in the modernisation of its armed forces and also to intensify defence cooperation between the two countries. Three years later, India and Vietnam stepped up their military cooperation by signing a "Joint Declaration and Framework of Comprehensive Cooperation between the Republic of India and the Socialist Republic of Vietnam as they enter the 21st Century." In 2007, this was followed up by a formalised strategic partnership.

India has been providing Vietnam with assistance in enhancing its naval and air capabilities in an attempt to check China's total supremacy in the South China Sea. This is greatly facilitated by the fact that Vietnam's Air Force and Navy military hardware has the same Russian origin as its Indian counterpart, which has enabled the Indian armed forces to frequently help their Vietnamese partners overcome their operational difficulties by supplying them with spare parts and advanced repair and maintenance services The Indian and Vietnamese Coast Guards have engaged in joint patrols, and both navies participated in a joint exercise in 2007. The Indian Air Force (IAF) could also, plausibly, lend its expertise in training the Vietnamese Air Force on Su-30s, which the Vietnamese have

4. G. Parthasarathy, "Dealing with Chinese Aggression", *Business Line*, July 21, 2011.

recently acquired. Insofar as the ground forces are concerned, both countries have engaged in joint exercises, and Indian Army officers have benefited from the Vietnamese expertise in jungle warfare and counter-insurgency. In return, the Vietnamese have been supplied with Advanced Light Helicopters (the Indian made ALHs) at "friendly prices", and Vietnamese officers have been given English lessons at an Indian language institute.

MINOR IRRITANTS IN DEFENCE RELATIONSHIP

Hanoi has been particularly disappointed in India's unreliability as a weapon procurement partner and has been increasingly frustrated by the lack of steady progress. Although, India has engaged in efforts to help modernise Vietnam's military, the Vietnamese are far from happy with the fact that New Delhi seems so reticent to supply it with some of the missile systems it had initially promised. Indeed, in 2000, and on several occasions during the Bharatiya Janata Party (BJP) government's tenure, India had vouched that it would gift Vietnam with the Prithvi and Brahmos missile systems. The Prithvi is an SRBM (Short Range Ballistic Missile), with a maximum range of approximately 200-350 km, whereas the Brahmos cruise missile, co-produced by the Indians with the Russians, is a very advanced anti-ship missile, based on the Russian Yakhunt anti-ship missile, which has a range of more than 300 km and can fly at more than twice the speed of sound. If the Vietnamese Navy were to acquire such a weapon system, it would prove to be a major challenge to Chinese naval dominance in the South China Sea, and greatly aid Vietnam in its strategy of sea denial and coastal defence.

It is believed that frustration at this, as well as at successive delays in arms deliveries, is what led the Vietnamese Ministry of Public Security to purchase sub-machine guns and sniper rifles from Pakistan in 2007, in a veiled but nevertheless significant expression of its displeasure. The Indians, for their part, are somewhat disappointed that the possibility of the Indian Navy gaining permanent berthing rights at the Vietnamese deep sea port of Cam Ranh Bay now seems to be increasingly remote. While the Vietnamese aired this possibility at the turn of the century, Vietnamese Foreign Minister Nguyen Dy

Nien declared in 2004, when questioned on the matter, that Cam Ranh Bay was "no longer a military port". Most analysts now concur in viewing Cam Ranh Bay as Vietnam's strategic trump card which it occasionally brandishes to balance China, but which it will most probably refuse to give up to a foreign power, unless it is compelled to under extreme circumstances.

India would be well advised to offer substantive assistance to the Vietnamese Navy to build up its capacity: (1) to counter maritime threats in the South China Sea, Gulf of Tonkin and Gulf of Thailand; (2) for maritime surveillance by the navy over such extended areas by both sea and air; (3) surveillance of its Exclusive Economic Zone (EEZ); and (4) protection of its offshore oil platforms. These tasks are well within the capabilities of the Indian Navy and India can, therefore, offer valuable help to the Vietnamese Navy in terms of force modernisation, communication and surveillance systems integration, training and operational expertise. Enhancing operational interaction between the two navies could also provide India with the much desired footprint in the maritime arena around Vietnam and China.

A training programme for Vietnamese sailors at the Indian Navy's submarine school, INS *Satavahana,* in Vishakhapatnam, which is equipped with advanced training aids and simulators, may be considered. Vietnam is getting six Kilo-class submarines, apart from other military hardware and software, from Russia under a deal inked in 2009. While the initial lot of Vietnamese sailors will be trained in Russia, the subsequent crews can be expected to undergo basic and advanced submariner courses at INS *Satavahana*. The Indian armed forces should encourage military personnel to take up Vietnamese language courses for more meaningful interaction on personal levels. Further, India may seek permanent berthing facilities at Vietnam's Na Thrang port for its submarines.

ECONOMIC COOPERATION

Vietnam's economic prospects continue to improve. The economy is rapidly moving from a planned economy to a market-oriented one with several key developments which should boost Vietnam's long-run sustainable growth rate; and Vietnam is currently the second

fastest growing country in East Asia, behind China, but ahead of Thailand, Malaysia, Singapore, Indonesia and the Philippines. Since the upgrading of diplomatic and economic relations to strategic partnership in July 2007, bilateral trade between Vietnam and India has increased vigorously. The bilateral trade value increased from nearly US$1.02 billion in 2006 to US$1.53 billion in 2007, US$2.48 billion in 2008 and US$2.05 billion in 2009 in spite of the global economic crisis, and to US$2.755 billion in 2010. India now ranks 11th among the main export markets of Vietnam. In the first seven months of 2011, the two-way trade value was over US$2 billion, 41 per cent more than the same period in the previous year, with US$1.3 billion by imports from India and US$739 million by Vietnamese exports. With stable quality, reasonable prices, and diversified products, Vietnamese exports can rapidly find a foothold in the Indian market. It is heartening to note that many ranking Indian economic groups have established offices and started efficient investments in Vietnam in mineral exploration, the auto industry, steel, gas and oil, energy, etc. Since early this year, India has nine new investment projects in Vietnam, with a total capital of US$11.2 million. Some projects will start operating this year such as the coffee project in Dak Lak, black coal powder plant in Vung Tau, and animal feed processing factory in Tay Ninh. The Vietnam Chamber of Commerce and Industry (VCCI) has signed cooperation agreements with the Federation of Indian Chambers of Commerce and Industry (FICCI), and Association of Indian Exporters to assist businesses of the two countries to find export partners and participate in the Vietnam-India Business Council in the framework of the Vietnam-India Mixed Committee.

COOPERATION ON SPACE RESEARCH

The Vietnamese government has been investing heavily in the development of its science and technology base, keeping in mind the long-term strategic interests. Space technology is a key area identified by the Vietnamese government. It would be interesting to note that various issues concerning space technology have found a place in Vietnam's strategic thinking. Interestingly, the first Asian in space was Vietnamese Cosmonaut Pham Tuan (now a

retired Lieutenant General) who flew in July 1980 under the Soviet Interkosmos space exploration programme. In 2006, the Vietnamese government announced the "Strategy for Space Technology Research and Applications until 2020" that lays down plans to develop communication and earth observation satellites. In April 2008, a 2.6-ton medium-sized satellite, the Vinasat-1, was put into geo-stationary orbit using the Ariane-5 launcher from French Guyana.

Vietnam has ambitious plans to put into orbit its second satellite and France is expected to provide the technology and Official Development Assistance (ODA) for this project. This small satellite would be primarily for natural resource development, environment study and disaster monitoring (VNREADSat-1). The lack of expertise in rocket science in Vietnam necessitates that it look for partners with the requisite knowhow. Vietnam's increasing interests in the satellite field are presently tapped by states like Japan and France and envisaging Vietnam's space development policy amply suggests that there are opportunities for other actors too like India which has a highly developed space programme. Keeping in mind the strategic importance of Indo-Vietnam relations, both partners could explore collaboration in the space arena.

India could offer help to Vietnam in various domains of space technology, including supply of satellites and launching services. India could also develop structures for satellite data sharing. Rocket science education is another area where India could offer help. Also, Vietnamese students engaged in space research could avail graduate programmes in aerospace engineering. Joint programmes could also be planned and Vietnam's scientists engaged with India's major projects like the Moon mission, etc to offer them exposure in the emerging areas of space science.[5]

OTHER AREAS FOR COOPERATION

- Pervasive and ongoing power shortages represent perhaps the biggest hurdle to sustaining Vietnam's fast economic growth and attractiveness as a manufacturing base to foreign investors. The country will need to add an additional 4,600 megawatts

5. Ajay Lele, "India-Vietnam Space Cooperation:Looking for New Frontiers", *Society for the Study of Peace and Conflict*, September 14, 2011.

of generating capacity per year from now to 2016 just to keep pace with demand, according to government estimates. Vietnam is actively considering the option of nuclear energy to meet these demands. The Indians can lend their vast expertise in the operation, safety and security of these plants. There can be training programmes for the Vietnamese engineers in Indian plants and a meaningful cooperation can be established.[6]

- Modernisation of the Vietnamese shipbuilding industry may be undertaken which would automatically involve development of new shipyards. India with its vast experience in shipbuilding can share its technical expertise in this field.
- Vietnam has 40 active ports, ranging from the small Vung Ro with just over 160 metres of wharfage to the dual-site Saigon port, which has 3,000 metres of wharfage, with 20 different quays having container, bulk and bag facilities. The country has a combined berthage of 40,000 metres and last year moved nearly 197 million tons of cargo, including over five million 20-foot equivalent (TEU) container units, a standard industry measure. [7]Many ports in the Vietnam Port System are very old and out-of-date. They are shallow in draft and their yard and warehousing systems are insufficient for accommodating containers and cargo. Today, there are only a few ports with modern handling facilities and equipment to serve big ships. India, that has accumulated significant experience in port design and construction, and providing marine safety, can assist in the port management facilities for Vietnam.
- India's Naval Hydrography Department, one of the best in the world, has done extensive work, mapping the bottom of the Indian Ocean. Sources say that Indian hydrographers, with skills developed over the years, have perhaps the best knowledge in the world of the bottom of the ocean — which would not only help mariners, but are invaluable resources for India's defence and strategic planning. With this kind of expertise, it would be but natural for India to render assistance to Vietnam in seabed exploration and exploitation.

6. M. Goonan, "Vietnam Stays the Nuclear Course", *Asia Times* , May 13, 2011.
7. Michael Mackey, "Vietnam Seeks Billions for Ports Overhaul", *Asia Times*, December 9, 2009.

CONCLUSION

India and Vietnam are both geo-strategically important countries, vital to all major nations with a stake in the freedom of the high seas. It is ironic that both countries share disputed borders with China and both have been subjected to military aggression by China. The current indicators in the Asia-Pacific security environment point towards China's emergence as a major strategic destabilising entity, which claims South and Southeast Asia as its natural and historical area of influence. China, in pursuance of its power aspirations, stands guilty of strategically destabilising India's and Vietnam's neighbourhood i.e. Pakistan and Cambodia earlier. China today is engaged in building its military might and force projection capabilities, creating a threat perception common to both India and Vietnam. In such a strategic environment, while making all efforts towards keeping China peacefully engaged in the Asia-Pacific, India and Vietnam should work towards building a bilateral strategic partnership based on the convergence of interests analysed above.

INDIA AND IRAN: ROUGH DAYS AHEAD

DHIRAJ KUKREJA

After the America-led war in Iraq and Afghanistan, Iran was predicted to be the next target. The Iran issue poses a serious policy dilemma for India: how to cooperate with the international community (read the US) in preventing the emergence of another military nuclear power with security implications for India, while not allowing our traditional good relations with Iran to be jeopardised? How to avoid misperceptions, particularly in the Islamic world, that India, which in the past, accused the US and other Western countries of adopting double standards in nuclear matters, has not now started adopting similar double standards? How to avoid providing a pretext to Al Qaeda, which has so far kept away from India, for targeting India because of misperceptions that India has become anti-Islam and the new Asian poodle of the US? Till 2003, Indian Muslims had, by and large, kept away from the Lashkar-e-Tayyeba and other Pakistani members of Osama bin Laden's International Islamic Front, but recent reports show that the Lashkar is trying for a breakthrough in the recruitment of Indian Muslims.

The US is geographically at a distance from the Islamic world, but India is right in the middle of it; 45 per cent of the world's Muslims live in the Indian subcontinent; it has the highest concentration

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of Muslims after Indonesia, even more than Pakistan. India has, therefore, to be more cautious in its policies towards the Islamic world than the US. America provided support to the nationalist regime of the Shah till his ouster in the 'Great Revolution' of 1979, led by Ayotollah Khomenei. The US policy-makers switched sides to Iraq during the Iran-Iraq War when it appeared that Iran might win. The US-Iran relations nosedived during the immediate years after the ouster of the Shah, with the hostage crisis of 1980-81, during President Carter's time, as the icing on the cake. The author, during a visit to Tehran in 1994, stayed at a hotel which had on its lobby wall "DOWN WITH THE US" inscribed in big, bold, brass letters!

Indo-Iranian relations, however, go much further back into history, from the times modern Iran was known as Mesopotamia and Persia. The story of India and Iran is one of ancient cultures when way back in the Bronze Age, the Indus Valley civilisation traded with Mesopotamia. The Mughals too had close ties with Iran, and Humayun, after his defeat by Sher Shah Suri, sought refuge in what was then Persia. The monument, Bibi ka Maqbara, built by Aurangzeb's son in Aurangabad, was designed by a Persian architect.

The Godrej, Tata, Wadia and other such Parsi business houses were founded by their Zoroastrian forefathers who moved to India from Persia. India, today, has the largest Parsi population in the world. While Iran has the largest Shia population in the world, 40 per cent of the world's 18 crore Shias, India is home to 3.5 crore Shias; Lucknow being a major centre for Shia culture and Persian studies.

With such historical relations, can India afford to ignore Iran in the modern day geo-political and national interest considerations? The answer can be both in the affirmative and negative. India can adopt an ostrich-like attitude and not take sides with either the US or Iran for we share reasonably good and mutually beneficial relations with both. Ranjan Mathai, India's Foreign Secretary, as quoted in *Deccan Chronicle*, February 19, 2012, summarises the necessity of why India needs Iran: "Our relationship with Iran is neither inconsistent with our non-proliferation objectives, nor is it in contradiction with the relationships that we have with our friends in West Asia or the United States and Europe. Iran is our near neighbour, our only surface access to Central Asia and Afghanistan and constitutes a declining

but still significant share.... of our oil imports"; it is a requirement of serving Indian national interests.

Politically or diplomatically, Iran has never ever done India any favours; it has always taken the side of Pakistan in Indo-Pak conflicts, notwithstanding the fact that Pakistan has primarily a Sunni population in comparison to its Shia populace, but it is an Islamic nation nevertheless. Iran has supported India on the human rights issue in Jammu and Kashmir (J&K) but has questioned the integration of the state.

Unlike the Indian diaspora in the other Arab states, Iran does not have many Indians who transfer funds back home. The balance of trade has always been in favour of Iran; India imports about $11 billion worth of oil that constitutes approximately 12 per cent of its requirements and that too not on any concessional terms; in contrast, Indian exports are only worth $2.5 billion; around 70 per cent of Iran's rice imports are from India.

Indo-Iran relations, hence, are based on a commonplace political maxim that there are no permanent friends or enemies in politics, only permanent self-interests. The two nations are dealing with each other not out of any extraordinary love for each other, but because it suits them to do so. Theoretically, India could always look for a different source to meet its energy requirements, but it continues to buy from Iran, though on a reducing scale, because it is geographically economical. The USA would rather have India purchase its oil from Saudi Arabia, a Sunni nation, or, better still for American businesses, convert to nuclear power.

Iran has been vitriolic towards America and its allies ever since 1979, the year of the Great Revolution; in retaliation, the USA severed diplomatic ties with Iran in 1980, imposed sanctions and has always been accusing it of exporting terrorism; in 1985, though, the USA did make a try to sell arms in exchange for the hostages in Lebanon! George Bush, in his first term, had declared Iran to be a part of the "Axis of Evil", accusing it of attempting to acquire technology for Weapons of Mass Destruction (WMDs). The USA, however, does not make any mention of its Arab ally, Saudi Arabia, in any of its security or diplomatic briefings, for exporting an even more toxic version of Muslim fundamentalism.

Does the USA or its allies, or other nations of the world need Iran and vice versa? The answer is 'Yes'. Iran is the third-largest oil exporting nation, accounting for about 5 per cent of the world's oil production with about 10 per cent of the world's oil reserves (the BP Statistical Review 2011, US Energy Information Administration). It is the 26th largest economy in terms of nominal Gross Domestic Product (GDP); oil accounts for the major share of Iran's exports and revenues, but the non-oil exports are also growing to cater for the fall from 40 per cent of real GDP in the 1960s to about 10 per cent in the last decade (International Monetary Fund, July 2011, International Grains Council). With income generated through the sale of oil and gas still accounting for 65 per cent of its fiscal revenues, Iran needs customers to finance its major imports of food items like maize, and the increasing demand for steel to construct its new steel plants.

The US sanctions over the last three decades have been broad and sweeping; in late 2011, all the assets of Iranian financial institutions were frozen by the USA along with the passing of a law that could impose sanctions on any foreign entity that conducted transactions with the Central Bank of Iran. This law had some Indian companies, like the Oil and Natural Gas Commission (ONGC), in a bind but the Iranian economy and infrastructure, despite 30 years of sanctions, continues to be fairly resilient.

India needs Iran, not only for its gas and oil but also because of its geo-strategic location. Iran provides the link for India to tap the vast iron ore reserves in Afghanistan, by building a 900-km rail-link through Chabahar port of Iran to the iron ore mines. Iran also provides India the connectivity to the hydro-carbon reserves of Central Asia. On geo-political issues, India and Iran are on the same side in Afghanistan with a mutual distrust of the Taliban. If India strains its relations with Iran by siding with the USA on the sanctions and totally discontinues purchase of oil from it, there is a fear that China may step into the void that India would create with its departure and steal a strategic victory. Global analysts, however, are of the opinion that China would defy the sanctions call, being a permanent member of the Security Council at the UN and would make an attempt for a 10-15 per cent discounted price for its oil purchases thereafter.

If Iran has its own regional aspirations, and is of geo-strategic and geo-political importance for South Asia, where do the USA and its allies slot in into a rather complex jigsaw puzzle? Iran seems intent to attain nuclear technology, which it claims is only for peaceful purposes; the USA and its allies do not believe a word of the Iranian rhetoric! Should Iran acquire nuclear technology and subsequently nuclear weapons, it would be a direct breach of its commitment to the nuclear Non-Proliferation Treaty (NPT) which it has signed of its own accord; such a move on its part would further strain relations with Europe, the US and Israel. Thus far, the USA has only been able to delay and not prevent Iran from acquiring nuclear technology, expertise and fissile material. It would be pragmatic for America to accept a nuclear-armed Iran that reserves the right to use its new military capability for defensive purposes only, but that is easier said than believed.

Israel, a former ally of Iran till the Revolution, an ally or should it be called a client state of the USA, feels that Iran, as it is, poses a serious threat to it; a nuclear-armed Iran would become an existential threat; Israel would then be confronted with several options, each of which would need to be evaluated for the inherent risks. Given the size and the neighbourhood that Israel inherited, its national security philosophy has always been to adopt an aggressive posture – undertaking preemptive strikes when necessary, defence through offence, and taking the fight to the enemy. Whether Israel now adopts aggressive or defensive posturing will depend on how Iran crosses the nuclear threshold and the backing that it gets from the USA.

Israel is also friendly with India, the relations having improved dramatically during the National Democratic Alliance-Bharatiya Janata Party (NDA-BJP) regime, though it was during Narsimha Rao's tenure that the decision to reestablish diplomatic ties was taken. It is today, India's most significant and reliable arms and technology partner, not only in the defence sector, but also in agriculture and other fields, related and unrelated to security. The Jewish lobby of the USA is upset with the continuing relations between India and Iran, the contentious issue primarily being another nuclear Muslim nation in the Indian neighbourhood.

India is not in favour of Iran going nuclear, or for that matter, any nation going nuclear and voted against Iran at the International Atomic Energy Agency (IAEA). It also appreciates that strained relations with either the USA or Iran are not in India's interests. While oil dependency through imports from Iran is being steadily reduced, as has been expressed by India's Foreign Secretary, Ranjan Mathai, during his visit to the US, India has been working overtime to find ways to beat the threat of unilateral US sanctions. The earlier arrangement with Iran of payment for its oil in euros, through a Turkish bank, has been modified to payment in rupees, parked in an Indian bank, with no connection whatsoever with US or European financial institutions. This agreement is a clear indication that India means to continue business with Iran and that while India respects UN mandated sanctions it has no obligation to follow unilateral sanctions, as in this case.

If India is in an odd spot, the US too find itself in a dilemma with Iran. Will the USA or Israel initiate military action against Iran? Uri Avnery (*Outlook*, March 13, 2012) does not think it probable for various reasons, both military and economic. In a worst case scenario, if Iran is attacked, then, in all probability, it could close down the Strait of Hormuz, as it has always threatened to do; such action on its part would strain an already strained world economy with an abnormal increase in the oil price. The USA and its allies are well aware of such a result of any military action on their part. If that be so, what is the way ahead?

A nuclear-armed Iran will not automatically be a threat to US interests and, hence, the USA should not necessarily treat a nuclear-armed Iran as an enemy. Even with long-range missiles, the US homeland will not be under threat; the political leadership must, therefore, weigh the potential of an asymmetric attack, towards which it was so arrogantly indifferent till 9/11, should it opt for a military adventure. If the US homeland is not threatened, does it enjoy the luxury of intervening in a regional war: Iran-Iraq or Iran-Saudi Arabia? It might, but it also depends on the Iranian threat perception which would have to be studied. Iran, as a self-nominated leader of the Gulf area, may wish to exploit the political value of nuclear weapons to challenge the US presence in its vicinity. Public ranting to

use nuclear weapons against the USA or its allies could prove costly to Iran, both politically and militarily: the Iranian homeland could come under attack, and it could risk losing whatever little goodwill it enjoys in the international community as well as the economic investment that has helped it survive against the sanctions; such an option will not be a part of the Iranian leadership's appreciation of the situation.

The USA should try and engage Iran through aggressive diplomacy and politics and not with its current policy of isolation and containment. It is practically alone in sanctioning Iran economically, barring its few allies. The European nations have advocated dialogue and engagement; the recent Brazil, Russia, India, China, South Africa (BRICS) Convention in New Delhi has also rejected disengagement with Iran. Through the efforts of the BRICS nations, the USA should try to get Iran to make its nuclear programme more transparent and available for international inspection.

India, as a member of the Security Council and the BRICS nations, can play a major role in leading the way for the engagement of Iran with the international community. India has always said that a nuclear-armed Iran, or any other nation in the region, is not in India's interest. India should take advantage of its good relations with the USA and push for dialogue rather than unilateral sanctions. India should remind Iran of its voluntary obligations that it undertook to abide by when it signed the NPT. India cannot afford to remain isolated and keep sitting on the fence, and has to weigh its options of maintaining cordial relations with Iran, keeping in mind its relevance in a post-US Afghanistan, as against the relationship with the US, its allies and the Arab world at large.

Iran has become a crucial test for Indian foreign policy; not taking sides in a conflict between two nations, with which you share reasonably good and mutually beneficial relations, can be justified on the grounds of national interests. India has, so far, successfully pulled off a diplomatic and political feat of some sorts, with surprising finesse; it does not, however solve the geo-political problem of Iran for India—rougher days may be ahead.

PERSPECTIVES ON NUCLEAR POWER POST FUKUSHIMA: UNITED STATES, FRANCE AND GERMANY

HINA PANDEY

NUCLEAR ENERGY: FUKUSHIMA AND PUBLIC PERCEPTIONS

The immediate and most apparent impact of the Fukushima accident was seen in terms of the collapse of the nuclear renaissance[1]. It was predicted that the risks in maintaining nuclear safety, emanating out of the very nature of nuclear power technology, would kill the nuclear enthusiasm of previous years due to immense public criticism. The long standing opponents of nuclear energy too jumped on the bandwagon of *'no to nuclear energy'* as they sought to capitalise on the moment, such that a steady push could be provided to overthrow the nuclear energy optimism of the past few years.[2]

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1. Nuclear renaissance is the term used to define the revival of the nuclear power industry since 2001, that is characterised by the expansion of nuclear capacity by the countries in Eastern Europe and Asia,
2. Prior to the Fukushima event, it appeared that the international nuclear industry had successfully overcome the "Chernobyl Syndrome", In fact, in the year 2010, nuclear power production briefly increased to a worldwide total of 2,630 terawatt hours. The same year, one of Ukraine's oldest reactors was granted a life extension and it was projected that Ukraine was likely to double its installed nuclear capacity. In the year 2010, 15 projects were initiated in a single year, which is more than in any year since the Chernobyl disaster. Mycle Schneider, Antony Froggatt, and, Steve Thomas, "2010-2011: World Nuclear Industry Status Report", *The Bulletin of the Atomic Scientists,* vol, 67, no.4, July 2011, pp. 60-77.

The reactionary public opinion was rooted in the threat perceptions that are attached with nuclear power as a risky technology. Already there exists a generic distrust among people with regard to nuclear power for various reasons. Studies have shown that "nuclear power had dubious distinctions of scoring at or near the extreme negative end for most of the characteristics"[3], that have been used for the comprehensive conception of risks by people. This problematic perception of the risks of nuclear technology, which is mainly "uncontrollable, catastrophic and dreaded",[4] has resulted in the reluctance in the public acceptance of nuclear power. This attitude of resistance towards nuclear power by the public has been accentuated by the Japanese nuclear accident. For instance, in Japan, the public support for nuclear power has reduced from 82 per cent to about 40-54 per cent.[5] In general, the overall popularity of nuclear power after the Japanese crisis had declined: opinion polls conducted soon after the Fukushima events are reflective of these fluctuating shifts in approval ratings of nuclear power by the public.[6]

Soon after the Fukushima accident, experts argued that the global nuclear industry would suffer the consequences of the third nuclear disaster, as many countries were likely to take a U-turn on nuclear power. Interestingly, the overall reaction of countries with regard to their nuclear policies was somewhat mixed. In Japan, due to the reduced public support for nuclear power, the country cancelled the construction of 14 new reactors by 2030; however, within the same Asian region, countries such as China and India are set on expanding their nuclear energy programme after a complete review of their reactors safety features. In fact, it has been anticipated that "in the coming years, China is poised to build more nuclear reactors in the coming years than the rest of the

3. M.V. Ramana, "Nuclear Power and the Public", *The Bulletin of the Atomic Scientists,* vol, 67, no. 4, July 2011, pp.43-51.
4. Ibid.
5. Ibid.
6. There has emerged a general decrease in nuclear power's popularity. According to the *Washington Post*, 64 per cent of Americans oppose the construction of nuclear reactors. Other countries that have witnessed a decline in public support for nuclear power support are Chile (12 per cent), Thailand (16.6), Australia (34 per cent), U.K. (35 per cent) and France (57 per cent), For details, see "Nuclear Power and the Public", *The Bulletin of the Atomic Scientists,* vol. 67, no.4, July 2011.

world combined".[7] India too is going ahead with its deployment of French EPR reactors in the first phase of the project at Jaitapur, ultimately making it the world's largest nuclear power station, despite intensified domestic criticism.[8]

Interestingly, the United States, that had halted the construction of any new nuclear power reactor since the Three Mile Island accident, is also keen on continuing with nuclear power expansion. Recently, the US Nuclear Regulatory Commission approved the licence for a new nuclear power facility for a two-reactor expansion at a power plant in Georgia for the first time in the last 30 years.[9] *Prima facie* these statistics suggest a negligible impact of the Japanese accident on the growth of the global nuclear industry; however, to gather the complete impression, a closer look at the whole picture is imperative.

The Fukushima crisis has definitely added a point of doubt about nuclear safety all across the globe by exposing the vulnerability of nuclear reactors to safety issues which might have not been imagined earlier. The year 2011 was indeed a watershed year in the history of nuclear safety, which would continue to have profound impacts on the nuclear policies of many countries. It would be premature to predict the rise or fall of the global nuclear industry in just one year post the Fukushima crisis, but a close look at the trend in various countries would be valuable in assessing a near probable future scenario.

It was anticipated that just like the Three Mile Island and Chernobyl accidents brought a pause in expansion of the global nuclear industry, Fukushima would do the same, as many countries were likely to review their commitment to nuclear power. The international reaction to Fukushima, however, remains diverse, as countries' individual responses towards their nuclear energy policies vary.

7. "China Marches on With Nuclear Energy, in spite of Fukushima" *The New York Times*, October 10, 2011, [Online: Web], Accessed on February 11, 2012, http://www.nytimes.com/2011/10/11/business/energy-environment/china-marches-on-with-nuclear-energy-in-spite-of-fukushima.html?pagewanted=all
8. "Computer System of French Reactors Needs Reinforcement: NPCIL", *The Indian Express*, [Online:Web]. Accessed on February 8, 2012, at http://www.indianexpress.com/news/computer-systems-of-french-reactors-need-reinforcement-npcil/908335/
9. "NRC Approves First Nuclear Power Plant License Since 1978", [Online: Web]. Accessed on February 8, 2012,http://www.ens-newswire.com/ens/feb2012/2012-02-10-094.html

Nuclear Safety: Utmost Priority

The events of the Japanese crisis have compelled governments across the globe to improve their nuclear safety through the lessons learnt. The Fukushima accident has indeed added one of the biggest challenges by exposing the vulnerability of nuclear reactors to an unexpected combination of events that occurred in Japan in March 2011. The governments in the United States, France and Germany, for the past one year, have been busy reassessing and redefining their safety parameters. In the US, a few days after the accident, the Director of the Nuclear Safety Project, David Lochbuam, made a lengthy statement before the Senate Committee that provided enough reassurance regarding similar safety concerns in case of an eventuality like Fukushima, but reiterated the need for the US reactors to prolong the life of onsite batteries in case of emergency station blackout for long hours.[10] Concern over the safety of nuclear reactors also emerged from the US as there is a great deal of overlap between the US and Japanese reactor designs.[11] The design similarity of plants such as the GE made Mark-1, which is currently an operational reactor, with the reactor of Daiichi has raised doubts regarding the capability of nuclear power reactors to handle the consequences of an accident of similar magnitude.[12] Emanating out of safety issues which were highlighted after the preliminary analysis of the Fukushima accident such as issues of the reactor design, siting, management, and the process of inspection and communication, it could be argued that capital cost of nuclear power would probably escalate. The resources required to address these safety parameters might add to the existing cost, and, at the same time, extend the construction period of nuclear reactors. Following the demand raised by the Council of the European Union, the French Prime Minister mandated the Nuclear Safety Authority (ASN) to undertake a comprehensive and

10. David Lochbaum (March 29, 2011), "Statement Before The US Senate, Energy and Natural Resource Committee, [Online: Web]. Accessed on February 22, 2012, at www.ucsusa.org/assets/.../lochbaum-senate-energy-3-29-2011.pdf
11. Mark Cooper, "The Implications of Fukushima: The US Perspective", *The Bulletin of the Atomic Scientists*, vol. 67, no. 4, July 2011, pp. 8-13.
12. *The Independent*, February 19, 2012, "Despite Fukushima Disaster, World Moves Towards More Nuclear Power", [Online:Web]. Accessed on February 20, 2012, http://www.indypendent.org/2012/02/19/despite-fukushima-disaster-world-moves-towards-more-nuclear-power

transparent risk assessment of all 150 nuclear installations in France. The detailed review of individual nuclear power plants provided by the Electricite de France (EDF) was later analysed by the Technical Institute for Safety (IRSN). The conclusions arrived at through the Complementary Safety Assessments (CSA) were validated by the ASN in January 2012. Although the ASN did not find any laxity in the safety measures at any nuclear power plant, it acknowledged the next steps for action identified through the safety assessment. The proposition of implementation of "Hard Core" (a new safety concept), as an organisational measure by the end of June 2012, could be viewed as an important step in maintaining the robustness of reactor safety in the future. Overall, the review through the Complementary Safety Assessment did not raise any obligation to immediately shut down the French nuclear power plants. [13]

In France as well as the United States, the importance given to continuous improvement of nuclear safety could be observed. It has been reaffirmed by the nuclear establishments in both cases that there is a need to enhance the emergency responses in times of extreme natural eventualities and to remain prepared even without human intervention.

Fukushima Has Not Arrested Nuclear Power Development

A generic trend among many countries favouring nuclear power development was visible just a few months before the Japanese disaster [14] Similarly, the French nuclear industry too launched a new strategy to boost its competitiveness on the international stage by partnering with China just a month before the Fukushima accident. It is noteworthy that France generated approximately 74 per cent of its electricity from nuclear energy in 2010. At present, 58 of its reactors are under operation, and an EPR unit is currently under construction, to be completed by 2014. The French nuclear establishment has reaffirmed its commitment to maintaining nuclear

13. Manpreet Sethi, Report, "Safety Assessment of the EPR Reactor", February 08, 2012. Talk by Prof. Bernard Bigot, Chairman, French Atomic Energy and Alternative Energies Commission, organised by the Centre for Air Power Studies.
14. Countries such as Namibia, UAE, Jordan, and Turkey had already expressed their willingness to pursue nuclear energy in order to achieve sufficient energy for their development. In January 2011, Japan entered into a bilateral agreement with Vietnam to build two power plants.

safety post Fukushima, and does not feel the need to permanently shut down any of its reactors. In fact, the country has decided to grant life extensions to all its nuclear reactors beyond 40 years. Very recently, France's will to continue its commitment towards nuclear power was reiterated through a 500 million pounds deal with the United Kingdom. The French state owned nuclear giant EDF plans to build a new generation of nuclear power plants in Britain. Clearly, the country doesn't plan to banish the prospects of nuclear power domestically as well as internationally. It is certain that the Japanese disaster has not significantly affected the French nuclear energy policy. The declaration of the permanent closure of all of Germany's nuclear reactors immediately after the Japanese disaster generated a widespread belief that suggests the Fukushima accident as a direct and sole determinant of this change in Germany's energy policy. This argument, however, could not be accepted in toto. In the middle of the 1970s, the European Economic Community (EEC) had planned a significant increase in nuclear energy capacity, requiring construction of six-eight new reactors to generate at least 10,000 MW by 1985. These plans too met with severe opposition that manifested significant public disapproval. There persists a great debate about the inclusion of nuclear power in the energy mix. Nuclear power, thus, has been a highly politicised issue, which has determined electoral support for the anti-nuclear political candidates.[15] Nuclear accidents in previous years such as the Three Mile Island (1979) and the Chernobyl tragedy have further augmented the prevalent public outcry of anti-nuclear sentiments in Germany. The German support for nuclear energy declined greatly after the Chernobyl mishap in 1986. The same year, the Social Democratic Party (SDP) passed a resolution that called for abandoning of nuclear power. In fact, the country has not commissioned any new reactor since 1989. The immediate effect of this resolution was manifested in terms of termination of nuclear research and development after 30 years of

15. In the 1978-79 elections in Hamburg and Lower Saxony, ecologists matched the liberal vote, eliminating the Free Democratic or Liberal Party (FDP) from the regional Parliaments. Dorothy Nelkin and Michael Pollack, "Political Parties and the Nuclear Energy Debate in France and Germany", *Comparative Politics,* vol. 12, no.2, January 1980, pp. 127-141, and "Nuclear Power in Germany", February 2012, World Nuclear Association. [Online: Web], Accessed on February 20, 2012, at http://world-nuclear.org/info/inf43.html

promising work. It is noteworthy that the raging debates among the German political parties over the life extensions being awarded to nuclear reactors ware further ignited by the Fukushima accident. In the year 2009, the phase-out of nuclear energy was cancelled but later reintroduced in 2011 after the Fukushima accident, mainly keeping in view the public reactions that corresponded with the parliamentary elections in the state of Wurttemberg. The German phase-out in this manner could be viewed as more of an exception rather than the rule

CONCLUSION

The Fukushima disaster has invited a wide range of reactions from many communities. Broadly, a grouping of perceptions on the basis of 'for and against' nuclear power could be seen in both cases. While the pro-nuclear power governments have reiterated their commitments towards nuclear energy, the public reactions gathered through opinion polls have stood vehemently against nuclear power. In this backdrop, it becomes logical to evaluate the impact of these perceptions on the future of nuclear energy policies in these countries. It is important to ask whether these negative concerns would compel the pro-nuclear governments to revise earlier decisions. The United States and France have a majority of the world's reactor capacity. It is less likely that 'Fukushima' would spell the death of nuclear commerce for these two countries. In the case of the United States, the eventual decline of nuclear power might not be possible because there is a consistent availability of support in the form of the Congressional lobby. Also, one has to bear in mind that nuclear energy traditionally enjoys significant support from the Republicans. In fact, Congressman Devin Nunes (R) has proposed a comprehensive Energy Bill that calls for 200 new nuclear power plants nationwide by 2040.[16] The Japanese nuclear disaster's ultimate effect on the US nuclear energy may be uncertain; however, it is clear that the American commitment towards nuclear energy expansion would continue in the foreseeable future. These sentiments have been very categorically conveyed by the US Energy Secretary Steven Chu, who, one and a half months later, reiterated the American commitment to nuclear energy by stating the important role of

16. n.1.

nuclear power in the future energy mix of the country. There is a realisation in the American decision-making that the events in Japan should not determine the end of nuclear power in the US.

While the United States and France have clearly conveyed their intention to go ahead with nuclear power, Germany, on the other hand, announced the shutdown of all its reactors by 2022, mainly for political reasons. It would not be incorrect to argue that the country's abandonment of nuclear energy was driven by two reasons: one, the domestic politics and, second, its socio-economic realities such as its static electricity demand which is expected to increase at a pace of only 1.1 per cent per annum. The domestic socio-political actuality of the country has certainly dominated its nuclear energy policy. It is noteworthy that, to address the issue of electricity deficit, Germany plans to increase its reliance on renewable energy resources. Even though the country has committed to an increase in green energy in the future, the interim import of more coal and gas from Poland and Russia would dominate its energy mix. It may also seem ironical that it seeks to meet the remaining electricity needs through France and Czechoslovakia[17]; thus, involving an indirect contribution of nuclear power in generating its electricity requirements.

The risks attached to nuclear technology are indeed severe, and leave no scope for complacency. However, one cannot overlook the fact that for the "last twenty–five years, the nuclear power industry had witnessed relatively an accident-free period compared to any other fuel used for electricity.... The world now has over 14,000 cumulative reactor years of safe commercial nuclear operation."[18] The future of nuclear energy in France, Germany and the United States could be said to be largely influenced by government decisions, the force at which the nuclear energy industry operates and, sometimes, the perception of the general public. The Governments of France and the United States have conveyed their will to proceed with their own nuclear power plans despite the Fukushima accident, while the perpetual anti-nuclear power sentiments in Germany have been

17. Manpreet Sethi (August 2011), "Germany's Nuclear Phase Out", *The Daily Star*, [Online: Web]. Accessed on March 02, 2011, at www.thedailystar.net/newDesign/news-details.php?nid=197060
18. Manpreet Sethi, "In The Wake of Fukushima: Implications and Lessons for India", in Manpreet Sethi, ed., *Nuclear Power: In The Wake of Fukushima,* (New Delhi: KW Publishers, 2012), p. 44.

able to topple the government's judgment about the expansion of nuclear power. The Japanese disaster, in a way, has offered a point of introspection to countries that have predominantly relied on nuclear power; and also those that wish to incorporate the dual use technology as a part of their energy mix for economic development. This point of introspection ought to be utilised to diminish the risk of another Fukushima by continuously addressing the evolving nuclear safety issues. In general, one trend may be gauged with regard to nuclear energy; that is, while many countries would take time to evaluate their nuclear energy plans for the future, others would abjure it and many more would be expected to carry on with nuclear power after this brief point of interruption.

NATION-BUILDING THROUGH INNOVATIVE COMMUNITIES

MANOJ KUMAR

The relevance of communities in the recent evolutionary process flows from the social nature of human beings. Before the Westphalian states started to colour the global landscape, humanity evolved because the existence of small, independent communities led to free and frequent exchanges, often from different knowledge-sets, principle-positions and cultures. The barriers for transfer of ideas were only geographical and not yet strong enough to block the knowledge flow. The formation of nation-states changed all that; suddenly, the primacy of governing bodies and achievement of 'power' as an important ingredient of nationalism seemed to impact the humanitarian values in the name of progress. Within a nation, there still existed communities with their own culture and heterogeneous lifestyles. The nationalistic governments were bent upon homogenising these communities as their pluralistic nature was considered a threat to a strong nation. With this, the advantages of free thinking, ruggedly honed management practices and ancient approaches to science were lost. One has to just consider the example of Vedic Mathematics in its present state in our country to realise how this downfall has manifested.

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Developed nations, in terms of economics and/or quality of life, without fail, have things in common. Their development has been achieved either by advances in knowledge or in some cases, nature has bestowed them with rare natural resources, which they can exploit for monetary benefits. The latter case actually does not lead to a sustainable progress model and has too many inherent contradictions to be able to show seamless growth. It is, thus, not a model worth emulating or discussing any further. The former growth model makes an interesting case study as it would become apparent that the development in this case started due to the contribution of individual flashes of brilliance but was sustained by a culture of unbridled innovations. Since ideas became the domain property of nations, to be traded for economic gains, great significance was attached by a few national governments to facilitating an atmosphere conducive for innovative ideas, directly or indirectly. Once again, the community culture, leading to the setting up of centres of excellence in various fields, was allowed to bloom. The rise of nations like the United Kingdom (UK), Japan, Germany and the United States (US) can be traced back to this common trajectory.

It would make for an interesting study to connect the dots from the past to the present-day realities, for planning a knowledge-backed future. This would entail an analysis of innovative culture that can be imbibed by a nation; how the communities of excellence can be allowed to shine like pearls, strung together in a necklace to produce a wholesome effect. In this case, it would be pertinent to understand the modern-day equivalent of communities within a nation and the innovative shine they can exude when working with a purpose. In these cases, the national development barometer is measured in terms of innovations that have been achieved. The Chinese example is an oft quoted one in contemporary society when talking of national innovation management and how it contributes to strategic power projection.

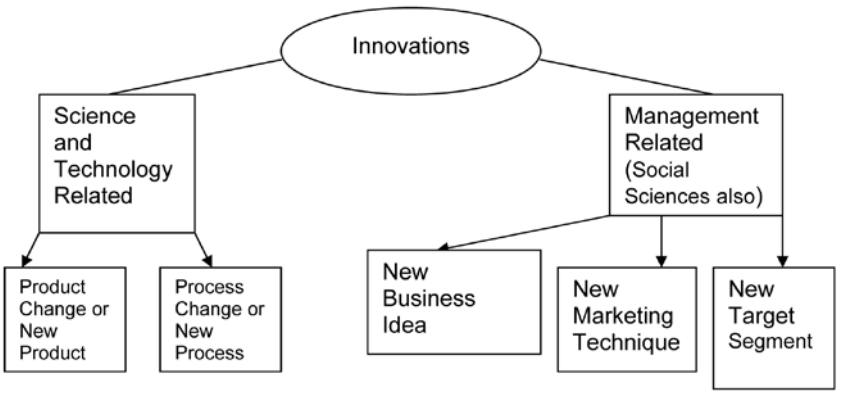
Even in times of globalisation, the national systems have remained significant for innovation activities. Actually, it can be observed that the growing proximity and potential tension among nation-states, brought about by globalisation, is a factor that demands studying and understanding nation-specific

systemic differences in their innovation-promoting practices. The community-based research systems have flourished in the Organisation for Economic Cooperation (OECD) countries. As long as nation-states exist as political entities, with their own agendas related to innovation, it is useful to work within national systems as analytical objects, with focus on community innovation policy and probably supranational coordination for transfer of ideas – with or without the attached costs.

COMMUNITIES AND INNOVATIONS

So what constitutes an innovation? Does pure science only contribute to innovations? How does technology development take place after a new idea/product has been established? These are some of the questions that require serious contemplation. Innovations have always been construed as breakthrough ideas or products. The common understanding is that innovations are limited to fields of pure sciences and, in rare cases, to practices of management like the theories of Quality Management (Total QM, etc.). In reality, the social sciences have a large potential for innovative approaches towards unravelling the complex human interrelations. For ease of analyses, this paper would restrict innovations to only a narrow field that would include launch of a new idea/product or alternatives that take an existing idea/product high in the value chain. To explain in layman terms, extremely rich art or literary work, though unique and path-breaking, would not be considered in the realm of innovations for this paper. On the other hand, creativity in idea-demonstration that enhances the value of the idea manifold would definitely be considered worthy of being called an innovation. The definition is also not being made so narrow so as to preclude all fields other than pure sciences and technology. Consider the following Fig 1.

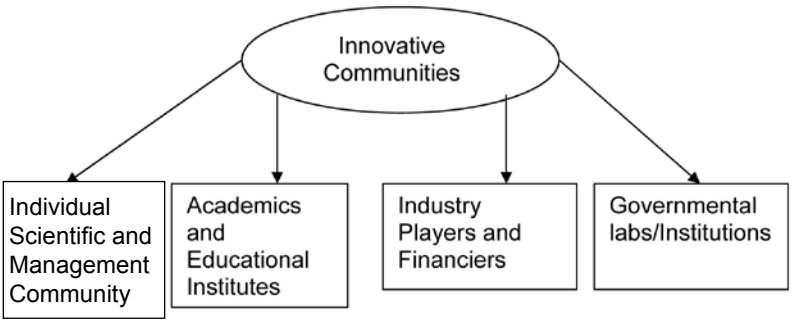
Fig 1: Concept of Innovations



Innovative communities within a nation are institutions that cannot be pushed into the background. It has always been thought that market-led forces would solve most problems through innovations or short-term arrangements but the importance of institutions, which actually lead to markets operating in the first place, cannot be overemphasised. In the US, the Department of Defence (DoD) is the largest investor in Research and Development (R&D), singularly contributing double the next federal department's contribution towards R&D[1]. The US government has put in place an interactive structure that constituted communities of scientific stalwarts, academics and academic institutions, private industry and government labs/institutions, all woven together and funded under an overarching governmental network. Thus, the US became one of the top international innovative countries and reaps the benefits till now. Innovative communities within a nation can, thus, be grouped as in Fig 2 below.

1. T.W. Lee, *Military Technologies of the World - Vol II* (Westport, USA: Praeger Security International, 2009), p. 364.

Fig 2: Innovative Communities in a Nation



India has many quality educational institutes that produce science graduates and engineers. This was an investment that was made by the erstwhile visionary leaders and is also a legacy of the British educational system. It has institutes like the Banaras Hindu University (BHU) founded by Pandit Madan Mohan Malviya in 1916 which is the largest residential university of Asia, with an Indian Institute of Technology (IIT) as its part; IITs started in the 1950s and 1960s (total of 16 at present); Indian Institutes of Management (IIMs) started in the beginning of the 1960s; the All India Institute of Medical Sciences (AIIMS), established in 1956, and the Indian Institute of Science (IISc), established in 1909 and many others of equal stature, give the country an edge as far as the number of qualified personnel are concerned. The edge was maintained globally by the graduates of these universities, in terms of quality, till a few years ago. However, an absence of innovative culture in the country proved to be the nemesis of new ideas originating from these institutes of repute. They continued to churn out brilliant scholars who went on to do innovative research in the Western countries, a phenomenon known as the 'brain-drain' that started in the 1960s and continues in some manner. The reason for this is *prima facie* economic as monetary benefits accruing due to possession of merit are relatively larger in the Western countries. However, this has diminished over the years as many large corporations have set up R&D centres in India and the pay disparities have been largely resolved when seen in the context of purchase power parity. What still remains unresolved is the community interaction and systemic

changes facilitated by the government, for stimulating innovations. The professional satisfaction and pride in showcasing merit is still a dream for meritorious students who pass out of these institutes and are, thus, driven to countries where merit-based opportunities are in place.

The quality of research work in the premier institutes mentioned above is miniscule. The inordinate focus is only on producing bright human resource. Again, the reasons for this are many. The primary ones are: (a) the orientation of the faculty towards pure academics, as different from application-based work; and (b) the absence of cascading demand from the other communities from such a large pool of talent. So the industrial community laments the absence of ready-to-use academics in their entrepreneurial pursuits; the government labs feel the absence of bright scholars to take on complex problem solving challenges; and venture capitalists find a dearth of bright ideas to support. What is missed out by these well meaning communities is that their particular requirements are hardly micro-managed in the academic institutions that are meant to provide them with a fresh set of talented human resource. The interaction between these communities and the academic institutions is very little and the success stories too few and far in between to merit a mention, though they do exist. A governmental aided framework for facilitating this interaction is missing. A few years ago, this process was meant to be kick-started by the government when they reduced the grants to most professional educational institutes and these were exhorted to raise their funds from creative R&D pursuits in collaboration with other communities. However, the so-called "last mile connectivity" was never specified in detail and, thus, the desired results were never achieved. In a not too welcome outcome, the education fees for the graduate and post-graduate entrants were revised upwards to cater for the shortfall from the government funding.

Some sparks of brilliance are still available within the country, from among the bright management and scientist communities that do not leave the country's shores for one reason or the other and continue to work in their field of specialisation. The latter is relevant because in a skewed priority mix, driven by India's unique

power structure, a brilliant scientist/engineer is any time 'inferior' to a bureaucrat or a police officer. More often than not, the few in the scientist /management community who carry on in their chosen fields, get to resolve day-to-day crises in their place of work and are considered brilliant operations personnel. That they fail to rise to their true potential, to innovate, is largely due to the system not posing the requirement for the same. The cliché that 'necessity is the mother of invention' is truly borne out here. Utilisation of this community for innovative work is only possible if and only if the other parallel communities in the country allow them to rise above the mundane and place demands (and accompanying accolades) on them, leading them to innovate. The department/industry leaders have to recognise the potential of such personnel and exhort them to go into unchartered territories. It is essential for the leaders to take a long-term view and this raises the moot question of recognition that is accorded to the innovative communities in a nation.

THE RISE OF THE PHANTOM…

The individual brilliant sparks who continue to work in India are a self-driven lot, with varying motivational sets. As and when their brilliance is recognised and freedom to chart their own trajectory" accorded, they show their worth. These two aspects are very important: (a) recognition of brilliance; and (b) freedom to follow-up on their own terms. The third, equally important driver that has already been mentioned is the demand for innovations to be placed on them. For example, if an individual writes a brilliant paper in a journal and it is recognised, merely according laurels to the individual would not serve the nation as a larger potential and opportunity would have been missed. A need for following through with the writing to convert it into a physical or tangible entity/process should be the normative next step. This need has to be posed by the communities that have the capacity to recognise the hidden 'phantom' in the work. The phantom here is the spark that is discernible to a select few. Thus, it is essential that the communities that recognise and/or are able to produce such innovative work should come together for taking it to its logical conclusion. Only then would the nation be able to gain from the phantoms hidden in the system.

A conducive environment for an innovative process to happen starts by the laying of a goal either by the individual or by the communities in the immediate vicinity. Mostly, the innovative process in such cases is very individualistic and if not supported after a certain point, would not lead to its logical conclusion. A team effort and support group needs to be involved at a certain point of time when the application aspects have to be worked out. The team has to be from communities that are also in the business of innovating. The requirement for the team is felt as the risk taking capability of a bright individual may not be commensurate with the quality of work output. This is because the supporting environment in terms of (a) venture funding; and (b) removal of systemic obstacles for innovative work is almost non-existent in India; there is always the fear that the individual may slip back to the mundane unless systemic efforts are in place.

There is another reason for the team effort to create an innovative programme. The innovator is involved with the germination of the seed but its reach to user communities is normally made possible by the team that can understand the finer points of economics and distribution, issues that are not always within the domain of the innovator. Without these supporting roles, the innovative phantom would languish in a so-called hidden closet. There are two communities that can facilitate the team to come together with the innovator. One of them is obviously the government labs and the other is the private industry. Even in the case of the latter, the government has to play a part for encouraging innovations. One of the models followed by the US for their military R&D started when the US Air Force in 1946 contracted with the Douglas Aircraft Company of Santa Monica, California, for Project RAND (Research and Development). Initially intended to provide advice on certain technical problems, it expanded to become an independent non-profit corporation with civilian experts assuming roles in strategic planning, economics, political scientists and engineers, etc. It remains one of the biggest and most active think-tanks in the US, concentrating on many socially relevant matters, including military strategy[2]. This is a prime

2. For more details, readers may visit the website http://www.rand.org/about/history.html . Accessed on December 23, 2011.

example of strategic thinking without which innovations would be difficult to come by and nation-building would be a difficult thing to achieve. When a technical think-tank in the US can go on to become an all encompassing centre that is globally held in high esteem, our policy-makers should be suitably motivated to form and utilise such communities of excellence within the country.

COUNTING THE BENEFITS

The benefits of innovative communities coming together for nation-building are large. The foremost being that the nation rises in the international hierarchy; with more innovations, the economic progress and build-up of national capability takes place. Employment generation is the first benefit that accrues from developing innovative communities and the resulting spin-offs. Equally important is that this would lead to formation of the right environment for retaining the bright sparks that are finding their way out of the country at this moment. Countries like the US, Japan, and now China, are prime examples of how their development stories have been written by developing innovations in their own country and not just by the transfer of intellectual property from others.

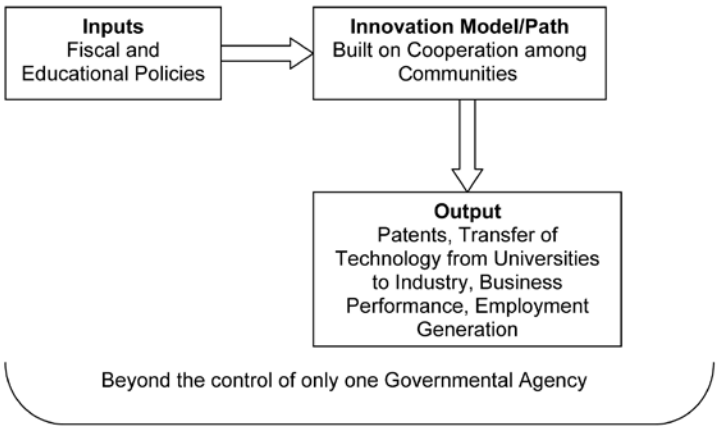
The quality of development that accrues due to innovations is far better than just the social development schemes of the government. With an economy relying on innovations, most of the employment that is generated is high-end and permanent. The employment keeps building up as the intellectual property market keeps expanding to nations that are dependent on it. This provides a kind of leverage to the exporting nation, which far exceeds mere economic gains. An example of the US military exports in this scenario would be quite apt. The leverage that the US holds with many nations in West Asia and a few others is a reflection of how it has gainfully utilised the innovative culture that it actively worked to support. The development of its Joint Strike Fighter (JSF) through a consortium model is another example of how it plans to use the leverage gained through innovative products in furthering its foreign policy. The innovations culture prevalent in the US is also obvious when one sees that their Small and Medium Enterprises (SMEs) produce 14 times more patents per employee than large corporations. This may seem

surprising considering the finances that are normally at the disposal of large corporations but a culture of surviving on innovation entrepreneurship is obvious from the same.

A SIMPLE INNOVATION MODEL

Considering the information on the innovations process that has been covered up till now, it would be prudent to specify a simple model of developing innovations in our country. With its known advantage of cheap labour, skilled and English speaking professionals, a high growth economy and a high quality education system that has the potential to be taken to a higher trajectory with a little change in the way of working, we are poised to lead the success story in innovations in all fields and not only a few like pharmacology where some Indian success stories are available. A suggested innovation model for the country is shown below.

Fig 3: A Simple Innovation Model



Our R&D activities bear a large governmental signature with the private sector coming a distant second. The educational institutes that should be the hallmark of R&D, manage an almost dismal third position. This skewed rating needs a sea change. There is no doubt that the government has to chip in with funding but it should be a facilitator too by creating the right kind of environment. The output of its R&D spending has to be measured in terms of resulting patents.

Premier educational institutes like the IITs and IISc are almost stagnating in terms of usable research. The focus here has to be on the word *'usable'*. The numbers of research scholars and patents filed from seats of higher learning are some of the least in India.[3] The University Grants Commission (UGC), the umbrella body, has to look into how the funds allotted to these universities are being spent, and the benchmark for the human resource should be set for the number of patents that are filed and not merely the number of papers that are published in journals. The faculty start-ups are negligible in India even as the concept is popular in the Western countries, thus, providing some motivation to the researcher(s).

EXAMPLES GALORE

There are many national innovation models that have proved their worth but with the changing times, all have evolved. In Japan, the national system of innovation has been led by the industry and academia has supported it well. The citizens were motivated and nationalistic feelings played their part in putting everything second to progress and prosperity. It was realised that the country cannot progress till it emerges as a source of products that only it can offer. In the US, the academia-led innovations process involved the industry for funding, with the active support of the government. Profit maximisation was the primary driver here. It was realised very early that the process from patenting to commercialisation would lead to profits and, thus, shortening this step is a must for reaping the profit revenues. The common feature in these two examples given above is the nexus between the national innovative communities that existed for one reason or the other; the reason is not important but creating a nation-building system of innovations is a must for the country to rise above the ordinary in the emerging world order.

The government has to play a big part in the proposed system by bringing out an enabling legislation; protecting and respecting the Intellectual Property Rights (IPR) of the innovative community and providing early motivation by means of funding or tax incentives

3. Readers may wish to access data at http://education.usibc.com/wp-content/uploads/2010/09/EY-FICCI-report09-Making-Indian-Higher-Education-Future-Ready.pdf and at http://www.indjst.org/archive/vol.3.issue.3/mar10hiremath-31.pdf . Accessed on March 13, 2012.

for a new patent that leads to a commercial product or market. The incremental growth story would continue but the time has come for our country to now showcase a transformational change through innovations, which would have resilience to withstand any economic downturn. It may be noted that the economic downturn has produced technological advances, from digital computers (Great Depression) to personal computers (early 1980s' recession) to the internet (recession of the early 1990s): all these oversaw a change in the then existing nations' competitive standing. India has to write this part of the future by taking the lead in innovations so as to emerge as the next knowledge bank of the world.

THE POLITICS OF THE DURAND LINE

RHEA ABRAHAM

It is visible in red on printed maps of the Pakistan-Afghanistan border, but the Durand Line remains invisible for the Frontier population amidst the chaos and chores of their everyday life in the instability of this region of South Asia. Situated in a rugged and arid mountainous environment, the Line hardly obstructs the local inhabitants who cross the border regularly for trade and transit and who conveniently insulate themselves from the entanglement of the historical conflict of the Durand Line Agreement.

The famous Durand Line, as it is known in international terms, is a boundary demarcation between Afghanistan and Pakistan covering roughly 2,640 km of land from the Chitral province of the North-West Frontier Province (NWFP) or Khyber Pakthunkhwa to the Chagai district of Baluchistan[1]. Created as a mere separation of influence between the Afghans and British in the 19th century, the Durand Line became a frontier in 1919 and a subsequent international boundary with the creation of Pakistan in 1947. In the contemporary period, however, the Durand Line as a frontier remains one of the world's most dangerous regions that continues to spark instability across the continent due to the anti-national activities, drug-trafficking

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1. Bijan Omrani, "The Durand Line: History and Problems of the Afghanistan-Pakistan Border," *Asian Affairs*, vol. 40, no. 2, 2009.

and arms smuggling through the demarcated province. Also, the region around the Durand Line provides access for non-state actors and terrorists to propagate their survival while, at the same time, spreading a breed of violent extremism among the people. Most importantly, the Durand Line remains one of the main sources of conflict between two unstable, antagonistic neighbours, Pakistan and Afghanistan, whose lack of coherence in border policies aims to destabilise the region further and create panic and security threats not only for their neighbours but also for the overall global security environment.

UNDERSTANDING THE DURAND LINE AGREEMENT

The definition of the word frontier can best be expanded as the border of a country that forms part of the demarcation with another country, where its farthest settled inhabitants continue to live. However, sparsely populated and isolated from the centres of urbanisation, frontiers form a major defence concern for a country and its national security. They are usually defined by the distance of the area from population centres, functional association with other places in the country and limitations in terms of the country's territorial extent[2]. They stand as distinct and visible areas facing the border of another country and are thereby different from boundaries that usually define, separate and delimit geographical territories.

Till the early 19th century, there was no real clash of interest between the Russians and British in the region of South Asia, but this changed with the expansion of Russian forces into Central Asia[3] in the year 1839. After the Crimean War, the Russian resumed their halted ambitions with their subsequent occupation of Kazakhstan, Kyrgyzstan, Uzbekistan and Turkmenistan by 1866, bringing the Russian frontier close to India and Afghanistan[4]. With Afghanistan's increasing apprehensions of a Russian aggression on its borders and territory, Amir Sher Ali Khan, sought the support of British India which was then not willing to interfere in the internal affairs of the country. However, the military exercises conducted by Russia on

2. "Frontier", at http://www.raconline.org/topics/frontier/frontierfaq.php#definition
3. S.V. Salahuddin, *Militancy in Pakistan and Afghanistan* (New Delhi: Pentagon Press, 2012).
4. Angelo Rasanayagam, *Afghanistan: A Modern History* (USA: IB Tauris, 2005).

the border with Afghanistan in 1873, heightened related tensions, and in such an alarming situation, Britain signed an agreement with the Khan of Kalat in Baluchistan under which Quetta came under the British control[5]. The British and Russians, however, later signed an agreement in 1878 declaring Russia's disinterest in the affairs of Afghanistan.

The subsequent years saw the second Anglo-Afghan War and the signing of the treaty of Gandhmak of 1879, which included surrendering of the Khyber and Kurram Passes, along with the cities of Sibi, Pishin and Loralai to the British. However, such an agreement was not well received by the nationalists and Afghan locals. The anti-British sentiments echoed in the expulsion of Amir Yaqub Khan, the installation of Abdul Rahman Khan, and the signing of a treaty which allowed the withdrawal of all British forces from Afghanistan and non-interference in Afghanistan's internal affairs. Subsequently, over the years, the land kept on changing hands between the Russians and British, fluctuating in the extent of the boundary that was being defined by all the parties, even as the arguments centred on the site of demarcation being near the Indus river. Under such circumstances, the Foreign Secretary from the Indian Civil Services, Sir Henry Mortimer Durand was deputed by British India to effect a compromise and bargain for territorial concessions in the Pakhtun area.

Named after Sir Henry Mortimer Durand, the objectives of the Durand Line Agreement of 1983 called for a delegation that emphasised on two keys points to be negotiated between the people of Afghanistan and British India. These included persuading the Afghans to forego their claims to the trans-Oxus area of Roshan and Shignan, two hill states in eastern Afghanistan, in return for the Wakhtan strip in order to delimit Russian territory from that of the British. The second being the need for an agreement to split the Pakhtun belt into the respective spheres of influence under the Afghans and the British[6]. The objectives of the agreement broadly listed the following[7]:

5. "The Durand Line: History, Consequences and Future", Report by the American Institute of Afghanistan Studies and the Hollings Centre (Istanbul: July 2007).
6. Satinder Kumar Lambah, "The Durand Line" *Indian Foreign Affairs*, vol. 7, no. 1 (New Delhi: MD Publications, 2012).
7. "The Durand Line Agreement", www.khyber.org/pashtohistory/treaties/durandagreement.shtml

- Dividing line from the eastern and southern frontier, from Wakhan to the Persian border and distribution of territories accordingly.
- No interference in each other's territories.
- A settlement of principal differences in opinion of both parties.

The districts of Multan, Mianwali, Bahawalpur and Dera Ismail Khan were part of Afghanistan from 1747 till Maharaja Ranjit Singh took them over in the 1820s, to join Punjab[8]. Through the Durand Line, however, the British joined these regions and carved out the areas of the NWFP in 1901. The Durand Line, thus, initiated in 1893, aimed to delimit the influence of the British from the state of Afghanistan over the region of the Pakhtun belt which comprised the areas currently under southeastern Afghanistan, NWFP and the Federally Administered Tribal Areas (FATA), namely Khyber, Bajour, Mohmand, Orakzai, Kurram, North and South Waziristan, Bannu, Kohat and Dera Ismail Khan. After the formation of provinces in Pakistan in 1970, these parts became isolated from the NWFP and joined with Punjab, resulting in a reduced Khyber Pakthunkhwa[9].

Repercussions of the Agreement

With the Durand Line Agreement, the people on the British side of the Line, now known as FATA, retained stateless autonomy and sovereignty over their lands. Clan leaders and chiefs were appointed to maintain control over the areas while the British maintained indirect control and supervision. Special laws under the Frontier Crimes Regulation (FCR) 1901, gave the colonial administrators the power to deal with the people of the region under the normal judicial process[10]. Even after the independence of Pakistan, it chose to allow continuation of the anomalous status of the region of FATA rather than incorporating it into the new state. The tribes of FATA supported the Pakistani decision and even gave in to demands of a stronger and friendlier Pakistan in its fight against India[11]. However,

8. Tariq Mahmood, " The Durand Line: South Asia's Next Trouble Spot", June 2005, www.nps.edu/Academics/Centres/CCC/research/.../Mahmood05.pdf
9. "Facts on the Durand Line", *Afghan Mirror*, 2005, afghanmirror.tripod.com/id25.html
10. Naveed Ahmad Shinwari, *Understanding FATA* (CAMP: Pakistan, 2010), Vol. 4.
11. Salahuddin, n. 3.

the FCR has given Pakistani officials the rights to detain, block and seize hostile groups and their property in the region which have been thoroughly misused by the officials. The Afghan War of the 1980s deeply impacted FATA with a number of *jihadi* organisations continuing to thrive in the region. Currently also, FATA has no political representation at the provincial level and no local elections. It remains poor and underdeveloped, with rampant unemployment.

The Durand Line also stands as a lineation for the Pashtun (the modern term for the Pakhtuns) population, popularly known as the Frontier population. The Pashtuns who are considered one of the most powerful ethnic communities in the region and in the world, derive their history of revolutionaries and warriors from the early 4th century, and their nationalism can be traced to the Mirwais Ghilzais and their struggle for independence from the Safavids in 1709[12]. The Pashtuns have inhabited the region from Peshawar Valley to Kabul and from Kandahar and Helmand Valley to Quetta. Currently, their population comprises 42 million, with 42 per cent in Afghanistan and 15 per cent in Pakistan[13]. In the current context, the Pashtuns on the Afghan side comprise the Durranis and Ghilzais; and the Waziris, Afridis and Khattaks beyond the Pakistan border[14]. The Pashtuns on all sides, however, religiously follow the code of the Pashtunwali which is a code of honour and conduct and is considered to be above any state law. For them, ethnicity is more profound than religious beliefs, despite their differences in policies. Therefore, the Durand Line has been highly condemned by all Afghan governments, including that of Hamid Karzai, for artificially dividing the same community of Pashtuns—the Waziris and the Mohmands. But, the ethnic minorities such as the Tajiks, Uzbeks and Hazaras support the Durand Line as it delimits the power of the Pashtuns to a status quo[15].

The Pashtun issue also continues to be a major source of contention between Pakistan and Afghanistan. In 1949, Pakistan attacked Afghanistan after which the *loya jirga*, the great council of Afghanistan, rejected all the boundary treaties made with the British,

12. Omrani, n. 1.
13. Jayshree Bajoria, "The Troubled Afghanistan-Pakistan Border" *Foreign Affairs* (CFR: USA, 2009).
14. Lambah, n. 6.
15. Joshua Rovner and Austin Long,"Dominoes on the Durand Line? Overcoming Strategic Myths in Afghanistan and Pakistan" Foreign Policy Briefing (CATO: USA, 2011), n.92.

gave support to the idea of an independent Pashtunistan and urged the people of NWFP to be given the right to a referendum and vote to join Afghanistan. Subsequently, a Pashtunistan National Day was commemorated, which is done even today. In 1950, Afghan forces carried out an incursion into the tribal areas, and, as a reaction, Pakistan stopped Afghan imports for three months. In 1955, the Government of Pakistan established a single unified administrative area of West Pakistan which threatened Afghanistan as a means of cutting off the tribal areas into Pakistan. In 1960, the Pashtunistan dispute allowed the Russians to establish relations with Afghanistan, with negative propaganda issued against the Pakistani government. In 1961, a second skirmish in the border shut down the Durand Line for several months, forcing Afghanistan to export most of its fruit produce via Russia, and not through the traditional route in Pakistan, thereby increasing the rift in Afghanistan-Pakistan relations. Also, with the onset of the Afghan War of the 1980s and the US war on Afghanistan in 2001, further rifts were created between the two neighbours as refugees flooded into Pakistan across the boundary and militant groups used the porosity of the Line to create further instability in the region.

Faultlines and Non-Resolution

The Durand Agreement of 1893 has been questioned on several fronts[16]:

- The Line was in consonance with the request of the Amir who, apprehending aggression by the Russians and British into Afghanistan, requested for a demarcation between Afghan and British Indian territory. However, the validity of the Durand Line was to continue as long as the reign of the Afghan ruler who ratified it[17].
- There was a need for ratification of the clause that emphasised on "the Amir" who had signed the document in his personal capacity and, therefore, the subsequent governments failed as parties to the agreement.
- The original copy was written in English and was to be signed by the Amir, who, however, refused to sign the enclosed map.

16. Lambah, n. 6.
17. M. Saleem Mazhar and Naheed S. Goraya, " Border Issue between Pakistan and Afghanistan," *South Asian Studies*, vol. 24, no.2, July 2009.

- The Afghans till date refute any Durand Agreement carrying the signature of the Amir.
- Though there is no such terminal clause, the Agreement was said to be only for a period of 100 years.
- Also, there were cartographic errors that did not tally with the textual definitions as enshrined in the Agreement. The delimitations were incongruent in their approval of signatures by the Commissioners where only four of the seven were signed by the British India Commissioner, which leaves doubt about the reasonability of the Agreement.
- The delimitation of the Mohmand territory which is now in FATA was done to the advantage of the British as the Afghans were forced to cede the Tor Kham ridge. Also Article 5 of the Agreement excluded the Afghans from the survey and delimitation of this boundary.
- After the third Anglo-Afghan War of 1919, another agreement was signed between the two regions which did not mention the Durand Agreement and thereby successive governments only imposed this particular treaty and not the previous ones, culminating in a partial annulment.
- From its inception, the area under the Durand Line Agreement, mainly FATA, was administered through tribal rulers and *maliks*, instead of direct intervention by Afghanistan and British India. Such a system was soon followed by the Pakistani government after its takeover of the area in 1947.
- The Pashtuns in the region were not told to join India or Pakistan but had been allowed independence as a separate state[18].
- The British viewed the agreement as an internal colonial issue rather than wanting to settle the issue. The NWFP with its capital in Peshawar was created to suit the interests of the majority Pashtun population.
- In the agreement for fixation of lines, Article 4 defines a "frontier line" between the two countries.
- The Afghans considered the Durand Line as the frontier between the areas controlled by the Amir and the British and not an agreement of demarcation.

18. Sultan-I-Rome, " The Durand Line Agreement: Its Pros and Cons", vol. 41, no. 1 (JRSP: Jordan, 2004).

- After Afghanistan became independent in 1919 under the government of Saud Khan, it accepted the Durand Line as its *de facto* border with British India.

In 1947, Pakistan defined the Durand Line as an international boundary between Pakistan and Afghanistan. Also, support was lent by Britain and the Southeast Treaty Organisation (SEATO) on such a claim by Pakistan in the subsequent years. However, Pakistan under the dictatorship of President Zia-ul-Haq, agreed not to resolve the dispute, as an undefined border with Afghanistan would help Pakistan extend out to Central Asia and justify interference in the region, which would be beyond any international law that only supported defined boundaries. Afghanistan, on the other hand, has always repudiated any boundary or Durand Line between Pakistan and itself. As stated by the Afghans, after the rollback of the British from the region, the agreement automatically lapsed as Pakistan was not entitled to inherit the rights of the British Indian government. Also, no legal basis was established to convert the Durand Line into a frontier.

There is a number of reasons for the non-resolution of the Durand Line mainly because both countries are weighed with constant and continuous internal fear of national security and instability. While Afghanistan fears lack of institutionalism, Pakistan fears an internal disintegration, which has indirectly dictated the resolution of the Durand Line between the two countries. Also, the issue of the Durand Line is laden with emotional interpretations of history and nationalistic fervour, with the Afghan politicians afraid to support the issue as it may hinder their popularity and acceptance in the Afghan policy-making[19]. Also, if Pakistan becomes soft on the Durand Line, there are further chances of separatism arising in NWFP and Baluchistan. Thus, the claim over the Line has become more of an assertion of state sovereignty by the Pakistani government and, therefore, despite the freedom to cross borders, the Pashtuns of FATA are forced to remain an integral part of the population of Pakistan[20].

19. Bajoria, n. 13.
20. n. 5.

Most importantly, the anomalous status of FATA further questions the Durand Line and the boundary issue. The process of Islamisation and support for the Taliban in the region during the 1980s had undermined the tribal chiefs of FATA and made them retaliatory to either government[21]. The locals continue to disregard the Line as its resolution will imply more interference by the government in the direct administration, and also the need of proper documentation for transit which is currently absent in the region. The tribals use the conflict as a threat to cede to either party in case of any military aggression. Also, such stateless borders have allowed the thriving of *jihadist* groups who have established ground in FATA through marriage alliances[22] and, thereby, a change in the Line may threaten opposition among the people.

CONCLUSION

Thus, summarising the complexity of the Durand Line, we can state that Pakistan accepts the Line as the international border between Afghanistan and itself and, at the same time, Afghanistan though weary of the Line and agreement as such, recognises it as a *de facto* limit of the boundary between the two neighbours while dealing with international trade and transit in the region[23]. The international community, including the United States and India, recognises the Line and is aware of its limitations while dealing with the region. However, US intervention and manning of boundaries has forced both countries to emphasise on the resolution of the Durand Line, which has been a constant source of conflict between the two countries due to divergent strategic outlook and dissimilar nationalistic ethos. It has also changed the security architecture of the region and has added to psychological impacts on the ethnic groups in the region. Border skirmishes across the assumed Durand Line have been several and severe over the years, involving the armed forces and police of both countries. Also, a skirmish between the two countries had been in

21. Gilles Doronsoro, *Revolution Unending: Afghanistan, 1979 to Present* (London: C Hurst and Co, 2005).
22. Salahuddin, n. 3.
23. n. 5.

full swing with the establishment of Pakistani military outposts in Paktika province of Afghanistan in 2003[24].

The Durand Line has become a structural barrier of destabilisation in the region and thereby there is lack of consistency in the implementation of the agreement and the boundary delimited by it. The conflict has, however, been restricted to theoretical constructs and episodic security clashes between both the countries and has, in fact, not had any major impact on the people who continue to traverse the borders without any demarcation. Therefore, in the current context, broader and softer policies need to be implemented by both governments to allow regular trade and transit in the region, along with a curbing of illegal trafficking and smuggling in the region[25]. Most importantly, the resolution of the Durand Line relies heavily on the settlement of the status of FATA and its people, and in understanding the validity of the agreement as a whole.

24. Mazhar and Goraya, n. 17.
25. Omrani, n. 1.

TUNISIA, EGYPT AND LIBYA AFTER THE ARAB SPRING: FUTURE OF ECONOMIC AND STRATEGIC TIES WITH INDIA

SHARAD SRIVASTAVA

Authoritarian governments, as we know by now, always look invincible — until a week before their leaders leave for the airport.

— Gordon G. Chang, in *Forbes Magazine*

THE LULL AFTER THE STORM

The 'Arab Spring' that has resulted in the ouster of three autocratic regimes so far, and threatens to take down at least another three, has not only led to a shift in the regional power equations, but has created a huge opportunity for India, which has been famously 'sitting on the sidelines' so far, to seize the initiative and cover ground that was lost when the Indian establishment could not make up its mind about which side it was on, and when Arab Africa came to realise that people's power actually works. According to a former senior British diplomat, Carne Ross, "… the Arab Spring is reshaping the political landscape of the region and creating a growing sense that people need to be heard…"[1] The Arab Spring has also proved a few things that we need to take note of:

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1. Carne Ross, as quoted in http://www.towardfreedom.com/africa/2542-a-new-dawn-western-sahara-and-the-arab-spring. Accessed on November 9, 2011.

- The popular uprisings have effectively disproved Al Qaeda's longstanding argument on the necessity of 'armed *jihad*' as a tactic to overthrow authoritarian regimes.
- That the uprisings were successful (at least in Tunisia and Egypt) without the overt support of foreign powers has been a great cause of empowerment of the people, who have now been emboldened to take a more active part in the process of reconstruction.
- The existing regimes would now have greater accountability towards the masses, and this should translate into increased developmental projects

Unfortunately, as the ground situation in the affected countries of the region is yet to assume finality of any kind – and questions regarding their long-term political and economic stability, besides internal and external security remain unanswered – we seem to be losing out to countries like China, Russia, South Korea and even Turkey, as far as strategic investments in the region are concerned.

In the Indian context, one needs to question: what, if any, are the salient economic features of each country that would provide opportunities for India?

SALIENT FEATURES OF THE ECONOMY IN TUNISIA, LIBYA AND EGYPT

Tunisia

According to the *African Economic Outlook 2011*, in the aftermath of the revolution, budget and current deficits are expected to increase due to the revolution's effect on tourism and foreign investment. Before the revolution, tourism contributed 5.4 per cent of the Gross Domestic Product (GDP), employed 400,000 people and provided 12 per cent of the country's foreign exchange revenue.[2] Neighbouring Libya was the only country to have invested heavily in all sectors of Tunisia's economy. Libya was Tunisia's main regional economic partner, with more than US$ two billion worth of trade in 2010, and its fifth biggest trade partner worldwide. More than 90,000 Tunisians were working in Libya at the time of the Libyan uprising. With the

2. *African Economic Outlook 2011*, p. 6.

future of Libya itself uncertain, the Tunisian economy is going to face challenges in all sectors.[3]

Tunisia's main selling point is its closeness to Europe, the Maghreb nations and Africa. As the world's fifth largest phosphate producer, Tunisia mainly exports inorganic chemical products and fertilisers to Brazil, China, Argentina, Saudi Arabia, India and Turkey. Despite an attractive phosphate industry, Tunisia has few partners among the new economic powers. Several United Arab Emirates (UAE) firms are seen to be putting money into Tunisia to boost trade and investment.[4] Tunisia has been looking for new economic partners and markets since 2008. China, India and Turkey are its most active new partners in trade and direct investment. **Between 2000 and 2009, trade has increased ten-fold with China, five-fold with the UAE and three to four times with Brazil, India, Indonesia, Kuwait and Turkey**. It has had a trade deficit since 2008 with emerging countries, except India, which is the world's biggest importer of phosphoric acid. Tunisia sells India 2.5 million tonnes a year, worth Tunisian Dinars (TND) 721 million in 2008 – this is 12 per cent of India's total imports of phosphoric acid and is expected to rise to 20 per cent in 2011 under a new partnership agreement.[5]

India's exports to Tunisia increased by 69.3 per cent from US$ 124.2 million in 2007-08 to US$ 210.3 million in 2008-09, mainly due to higher exports of machinery and instruments. **However, India's imports from Tunisia also increased more than three-fold** from US$ 156.2 million in 2007-08 to US$ 600.5 million in 2008-09, mainly on account of higher import of fertiliser and inorganic chemicals. Thus, India's trade deficit with Tunisia widened from US$ 32 million in 2007-08 to US$ 390.2 million in 2008-09.[6]

The revolution is, therefore, a new chance for India to increase its trade and industrial footprint in Tunisia. There is scope for creating dedicated teams from the government and private sector to invest in the process of rebuilding the Tunisian economy and, thus, create greater leverage in the region. India could rapidly engage with

3. Ibid., p.9.
4. Ibid., p 14.
5. Ibid.
6. Exim Bank (Research & Planning Division), "Profile on Tunisia" September 2009, accessed at: http://www.gnexid.org/country/Tunisia.pdf

Tunisia in areas like infrastructure building, industrial machinery, and equipment, heavy electricals and machinery, etc. besides greater active involvement with the new leadership to help form governmental institutions that would go a long way in ensuring stronger trade and economic ties. Preferential access to Tunisian sea ports would further bolster Indian trade ties in the region. India could also engage with Tunisia in the areas of police and military training and cooperation at a later stage, after establishing its presence in the industrial and services sector. The impact of regime change in Tunisia may prove to be a new beginning for India. A new government has been sworn in, signalling a return to stability and public order.[7] On the regional security front, a stable new government in Tunisia that is friendly towards India would ensure India some leverage over the increasing Chinese foothold in North Africa.

Libya

Though separated by geography, India and Libya have traditionally enjoyed strong bilateral ties. India established its mission in Tripoli in 1969. Over the past three decades, Indian companies have executed several projects, including building hospitals, houses, schools, roads, power plants, airports, dams, transmission lines, etc.[8] India has often supported Libya in international fora. India welcomed the UN Security Council Resolution 1506, adopted on September 12, 2003, lifting sanctions imposed on Libya. Since then, there has been a series of high-level visits between India and Libya.[9] Libyan Foreign Minister Mr.Abdelati al Obeidi visited India in July 2011, even as the Libyan armed struggle was on the boil, and Libyan President Gaddafi was engaged in suppressing what he termed as the 'rebellion' with brutal use of force.

However, economic relations between Libya and the emerging economies, notably China and Turkey, have been expanding rapidly. These were particularly prominent in the fast-growing expanding

7. Ministry of External Affairs, Government. of India, Report on "India-Tunisia Relations", January 2012. at: http://www.mea.gov.in/mystart.php?id=50044535
8. Trade Data Source: Ministry of Trade and Commerce, GOI and DGCI & S, Kolkata. (Note: The country's total imports since 2000-2001 do not include import of petroleum products and crude oil)
9. Ministry of External Affairs, Government of India, Report on "India-Libya Relations", August 2011. at: http://www.mea.gov.in/mystart.php?id=50044493

construction sector as foreign construction firms have been contracted to carry out the country's large public infrastructure projects. Libya was increasingly positioning itself as a "gateway to Africa", an image that appeals to Turkey and China that wish to strengthen their economic foothold in the continent. Libya's non-oil exports continue to be hindered by the country's weak export infrastructure. Driven primarily by public investment and government consumption, the construction sector is likely to remain the most important non-oil sector. In spite of efforts to diversify the economy, the oil sector remains the greatest determinant of Libya's economic health and of the country's future recovery. The country has the ninth highest oil reserves in the world and the second highest natural gas reserves in Africa. Only around 25 per cent of the country's surface area has been explored, meaning that the potential for growth in the sector is huge. Opportunities for Foreign Direct Investment (FDI) are expected to be boosted by the creation of a special economic free zone in Misrata, and a proposal for a second zone in Zwara. An investment promotion law passed in April 2010 is aimed to increase FDI in line with national priorities.

The conflict in Libya caused many Indian companies, both public and private sector, to leave suddenly, putting their manpower and operations that were left behind in jeopardy. Punj Llyod, for example, was executing oil and gas and other infrastructure projects worth Rs 3,589 crore in Libya when the revolt began. In percentage terms, it was 16 per cent of the company's total order backlog, indicating that Libya was significant to the company's growth story. Most of these and other Indian investments are still in a state of flux, as uncertainty persists over the likely nature of India-Libya relations under the new regime.

According to J.P. Pradhan, Indian investment in Libya remained confined to project execution in the areas of construction, transmission and other development activities. Libya's friendly relationship with India, adoption of a flexible visa regime, and possession of the biggest oil reserve in Africa has the potential to see more investment by Indian companies aspiring to control oil resources abroad.[10]

10. Jaya Prakash Pradhan, "Indian Direct Investment in Developing Countries: Emerging Trends and Development Impacts", ISID Working Paper 2008/08 (Institute for Studies in Industrial Development, in a study prepared under the UNCTAD's Programme on South-South FDI and Developing Country TNCs).

The *African Economic Outlook 2011* opines that despite the persistence of uncertainty, the GDP is expected to recover again sharply in 2012, *assuming the political situation stabilises*.[11] A huge potential exists and needs to be exploited here before South Korea, Russia or China steps into the void.

Egypt

In Egypt, the restoration of political stability and effective reform are essential if the Egyptian economy is to return to robust growth that benefits the population as a whole. In order to alleviate poverty and improve living standards, the priority has to be a high and sustainable growth rate while addressing social concerns such as unemployment, income distribution and the poor level and quality of education and health services. The Arab countries constitute an important source of FDI and are also a primary destination for young Egyptian migrants. Egypt's most important emerging country partnerships are in Asia, with China and India at the top of the list followed by the Arab countries, including the UAE, Saudi Arabia and Kuwait, and to, a lesser extent, Jordan.

China is the country's fastest growing trade partner while the UAE, Russia, Saudi Arabia and Turkey have also posted consistent growth. The trade balance is in deficit with most of Egypt's emerging country partners. China accounts for the largest trade deficit. Egypt has been trying to broaden ties, signing a series of agreements with a variety of countries and regional groups so as to benefit from lower tariffs and improve market access. India needs to tap this potential market and establish itself in fields like infrastructure, healthcare, education, heavy machinery and electricals and the Knowledge Process Outsourcing (KPO)/service sectors through improved diplomatic and political interaction.

INDIA'S STAKES IN THE RECONSTRUCTION EFFORT

In the post Arab Spring nations of Tunisia, Egypt and Libya, India is seemingly moving at the proverbial elephant's pace—as far as reacting to opportunities in both trade and diplomatic spheres is concerned.

11. n.2, p.3.

What does a change of guard in Libya mean for India and its businesses? Unlike Europe and the US, which openly aided the rebel National Transitional Council (NTC) of Libya, India did not back strong sanctions against the Gaddafi regime during the six-month-long civil unrest. It followed a wait-and-watch policy and abstained from the UN Security Council Resolution of March 17, 2011, declaring Libya a "no-fly zone". The diplomatic gamble: any democratic regime in future will most likely accommodate India's interests. In the words of former Foreign Secretary of India Lalit Mansingh: "If democratic institutions replace dictatorial regimes, they can't afford to ignore India." India's external Affairs Ministry released a guarded statement saying the situation should be normalised by the people of Libya themselves in a peaceful manner "adhering to democratic norms". According to Oil India Limited (OIL) Chairman N.M. Borah, "We can't move forward until the country stabilises." It is common knowledge that Libya and a few other West Asian countries are crucial for India's energy security. India imports 80 per cent of its oil needs and the region contributes almost 70 per cent of the supplies. Libya produces only 2 per cent of oil production worldwide, but it is one of the 10 countries with the largest proven oil reserves.

We need to learn crucial lessons from countries like South Korea and China in this regard. South Korea's Ministry of Land, Transport and Maritime Affairs called for an emergency meeting with 21 Korean construction companies having a presence in Libya, *to put in place a strategy and corner Libyan reconstruction contracts* which could be worth over $120 billion. Seoul had earlier donated one million dollars to the rebel NTC through the World Food Programme, and has now announced humanitarian aid worth one million dollars. Contrast this with India's effort. India which was so far distancing itself from the rebels, has only recently issued a statement saying that the country is ready to "extend all possible assistance for reconstruction and rehabilitation to the friendly people of Libya". Indian companies like Punj Lloyd (that handled 10 infrastructure projects with a manpower of 1,318 Indians), are undecided whether they would expect continuation of the existing contracts or win new ones under the next regime.

The Indian establishment, thus, needs to act fast and decisively to reinstate critical manpower, push trade relations both diplomatically

and politically, and put the ongoing contracts and Joint Ventures (JVs) back on track. More importantly, the Indian government needs to provide clear signals to its industry on where this relationship is headed, so that the industry can then inject its people and capital in the right sectors while there is still time, before countries like South Korea and China seize the initiative.

STRATEGIC IMPORTANCE FOR INDIA

China has been actively engaging with Tunisia since 1964, and there have been several mutual visits (almost every alternate year) at ministerial and diplomatic levels by both nations.[12] Since 1984, Chinese companies have entered Tunisia, involving themselves in the infrastructure building, agriculture, light industry and other related fields.[13] In the light of West Asia's current instability, China is increasingly focussing its efforts on finding energy resources in other regions around the world. It is busily signing contracts with Nigeria and Angola and is looking at possible projects in other oil-rich African nations such as Niger. Nigeria and Angola already supply China with as much oil as Saudi Arabia. China has been involved in various oil business deals with a majority of the 19 countries in Africa that had either produced oil or had confirmed oil reserves in December 2005. China has either established or has been pursuing oil deals with 100 per cent of those countries that have at least 0.5 billion barrels of proven reserves.[14] Libya, Egypt and Tunisia together had nearly 45 billion barrels of proven oil reserves in 2006, forming nearly half of the proven reserves in entire Africa. Since 2004, China has dramatically increased diplomatic visits with African nations at the highest levels. Chinese President Hu Jintao has vowed to deepen ties on all fronts with African nations.[15]

12. At http://www.china.org.cn/english/features/focac/183413.htm. Accessed on November 23, 2011.
13. At http://www.china.org.cn/english/features/focac/183413.htm. Accessed on November 23, 2011.
14. Lt Cdr Cindy Hurst, "China's Oil Rush in Africa," paper published by the Institute for the Analysis of Global Security (IAGS) in 2006. Cindy Hurst is a political-military analyst with the Foreign Military Studies Office, and also a Lieutenant Commander in the US Navy Reserve.
15. FP World Economic News Summary for Wednesday, *Agence France Press*, February 4, 2004, at http://www.lexisnexis.com.

China has its own problems like rising inflation, food costs and labour unrests, declining property prices and consumer demand, coupled with increasing migration of private entrepreneurs, their families and their millions of dollars to countries like the US and Canada – an indication of the steady downfall of the economy. Therefore, China is going about improving its external ties in Africa and several other regions *with a sense of urgency* so as to provide its export oriented domestic industry with newer markets in the developing world. The Chinese political system is also going through a historic transition as the 'Fourth Generation' Communist leaders are preparing the way for the 'Fifth Generation' to take over. The next two years (2012-13) would see this transition take place formally and it will be followed by the reconstitution of the Chinese Central Military Commission (CMC) in 2013-14. It would take at least two years for the new leaders to consolidate their position, and that too provided there is no major economic upheaval or public unrest in China between now and 2015. Hence, this is a great time for India to act decisively.

The change of regime in Tunisia, Libya and Egypt, presents a window of opportunity for India to increase its involvement in both the process of their political reform and their economic reconstruction. Tunisia and Egypt are both secular states with plural religious traditions. But they are also deeply Muslim societies, with strong Islamic legal traditions. India has had a Constitution that is secular and has stood the test of time for more than six decades. India also has a large Muslim population and various aspects of Islamic culture have been an integral part of our society, and India is, thus, in a position to understand the intricacies of Islamic traditions much better than any Western power, or, for that matter, even China or Russia. This is the right opportunity for India to act fast and reestablish itself diplomatically, industrially and economically in the Arab world spread across the North African region and West Asia. While there are fears of the new regimes having stronger Islamist leanings, one needs to build relations with them on the fact that *stronger economic ties will dictate better political relations in the post Arab Spring world* due to the realisation that in the 21st century, no nation can prosper economically while remaining in isolation politically.

India has tremendous potential to engage these nations politically and diplomatically, with an aim to strengthen long-term economic ties and promote trade and commerce in sectors like infrastructure, education, oil and gas, pharmacology and healthcare, automobiles and heavy engineering and the service industry where India is capable of delivering the goods. Greater exchange of goodwill visits by the political leadership, preceded and followed up by government officials and dedicated teams of both government agencies and private investors with a specific agenda towards increasing bilateral and multilateral cooperation in all possible fields is the only way forward for India; and the time is *right now*, else we might once again "snatch defeat from the jaws of victory" – to quote an often used cricketing phrase!

ROBOTICS RESPONSE TO NUCLEAR CRISIS IN JAPAN

YEON JUNG JI

After the nuclear accident in Japan on March 11, 2011, the task of hazardous duty robots has become a centre of gravity in responding to impending disaster scenarios and risk management. While many approaches have been considered to manage nuclear disasters, engineered robotics is used to anticipate problems, and it plays a role in solving problems in areas that are inhospitable to humans. Evidently, the world has refocussed its attention on disaster management by sending robots to Fukushima that could effectively perform commanded orders, such as inspection of nuclear sites and decommissioning of hot zones. Perceiving the acute situation in Japan, many countries offered to dispatch their heavy duty robots, hoping for quicker disaster management. In response, Japan accepted the offers from the US, France and Germany, but it refused the offer from China.

More than one year after the incident, there is hope that robots will play a decisive roles in future disaster relief activities instead of humans. As some would argue, the nuclear industry and robots are invariably connected even during times of peace as robots are widely used for testing radiation, visual inspections, minimising human exposure during hazardous situations and, undoubtedly,

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in emergencies. Hence, the role of heavy duty robots has not only been reemphasised at the state level, but also at the global level by the Fukushima experience. On the other hand, it reveals a number of evolving problems in science and technology and political decision-making in using robots. In addition, this situation provides a preview of the competition that exists in the global robotics industry, for example, how the industry is currently developing from a business that predominantly produces military technology to a business that is finally converting to disaster management such as nuclear accidents.

USE OF ROBOTICS IN JAPANESE CRISIS

Within a few days of observing the tsunami-damaged nuclear plant, the International Atomic Energy Agency (IAEA), alarmed by the significance of the accident, issued a global call for robots and unmanned vehicles using radiation-hardened equipment. The US, Germany, and France, which are all known as leaders in integrated robotic technology for disaster management, dispatched robots to the Daiichi nuclear power plant in Japan. These robots were used to gather data such as measuring the level of radiation, checking the temperature, humidity, oxygen concentration, formation of debris, and investigating the overall situation. A series of attempts from those states has been sustained for over a year after the accident and has demonstrated both the prospects and limitations of developments in the robotics industry.

In keeping with the US' historical record of participating in nuclear risk management, the US' top official in the Energy Department recommended to the Senate panel that they send a shipment of radiation hardened robots to Japan on March 29, 2011.[1] The intention of this shipment was to record a radiation leak with several radiation-hardened cameras. The robots that were sent by the US were designed with sophisticated electronic frames that can withstand radiation levels that are high enough to kill people.

Firstly, the T-Hawk, which is manufactured by Honeywell, is a micro air vehicle that was used to inspect radiation levels around

1. "US Sending Robots to Japan to Help Nuclear Plant", *Associated Press*, March 29, 2011.

and inside the Daiichi plant on April 6.[2] The T-Hawk was initially introduced as a 'combat-proven surveillance unmanned micro vehicle' by the US Army in 2007. However, it is now known in the US Navy as lightweight, portable, quickly assembled, and architected to provide "Real-Time Situation Awareness".[3] During its 56-minute operating time, the T-Hawk is controlled by a remote control, can fly up to 10,000 feet, and can withstand a maximum of 20-knot winds. In addition to a number of military operations, the T-Hawk was expected to be the head robot for this mission and join the team from France and Germany in Fukushima. It was sent into Units 1, 3, and 4 of the Daiichi Nuclear Power Plant to evaluate heavily damaged areas. However, on June 23, it was reported that it lost control for an unknown reason in the No.2 building of the nuclear reactor.[4]

On April 17, two Warriors and two Pack Bots, both manufactured by another US-based company known as iRobot, were sent to Japan to enter the unsafe area. Initially, these robots were designed by the US Army, Air Force and Navy with specific intelligent applications in mind and in addition to the T-Hawk, were used in both Iraq and Afghanistan.[5] These robots also played an important role in accessing Ground Zero after 9/11.[6] The Warrior robots that were sent to Japan were highly advanced models that were capable of analysing video and audio-based radioactivity data. Such robots are able to climb stairs and cross water carrying a maximum payload of 150 pounds. The Pack Bots which were initially used for surveillance, reconnaissance, and neutralising bombs in the battlefield, were used to measure oxygen levels, gamma radiation, and other hazardous debris.[7] With the association of the Tokyo Electric Power Company (TEPCO) as a distributor, this robot entered Reactors 1 and 3 to measure temperature, pressure and other radioactivity readings, such as the

2. "T-Hawk MAV, Helicopter Drones Join Japan Effort", *Cnet News*, April 6, 2011.
3. At http://www.thawkmav.com/
4. "T-Hawk Lost his Control and Land on Nuclear Reactor No.2 of Fukushima", *All voices*, June 23, 2011.
5. "US Robots to Peek Inside Japan's Nuclear Meltdown", *AOL News*, March 24, 2011.
6. "NASA Technology Looks Inside Japan's Nuclear Reactor", NASA, April 26, 2011. At http://www.nasa.gov/topics/technology/features/robots20110426.html
7. "How Battle-Tested Robots are Helping out at Fukushima",*Popular Mechanics*, April 18, 2011. At http://www.popularmechanics.com/technology/military/robots/how-battle-tested-robots-are-helping-out-at-fukushima-5586925

concentration of oxygen, ammonia, carbon dioxide, and hydrogen.[8] Prior to its experience in the Japanese nuclear power plant, iRobot had domestically announced its application of Warrior and PackBot in a nuclear power plant in South Carolina on April 2, 2012.[9] As one of the significant factors that these robots need to improve is the ability to analyse hazardous situations through experience, iRobot announced an improvement in their ability to use collected data from the standard requirement of operating in analysing a nuclear accident.

Another series of the Anglo-American Company's unmanned vehicle equipment, Bobcat T300 heavy-duty loaders, Dragon Runner, and TALON, manufactured by QinetiQ, have been used in nuclear disaster recovery. After the decision to participate in Fukushima, QinetiQ North America and TEPCO shared information on training TEPCO employees to operate these robots. TALON is QinetiQ's radiation-tested first responder robot that is able to plot a route through nuclear sites that allows it to keep its loop out of radiation levels. Like other robots, TALON accomplished its mission of decontamination at Ground Zero with its CBRNE (Chemical, Biological, Radiological, Nuclear and Explosive) detection kit. These kits are able to efficiently detect more than 7,500 environmental hazards.[10] The Dragon Runner, originally designed for Explosive Ordnance Disposal (EOD) activity in small spaces while enabling troops to remain at a safe distance from the risk, was sent into the site to investigate rubble piles, trenches, and culverts using thermal cameras.[11]

France and Germany that formed an independent team and organisation whose goal was to manage a nuclear disaster systematically, also determined to send indigenously developed robots to the site under the decision of the group Intervention Robotique

8. "Repurposed iRobot military 'Pack Bots' Enter Damaged Japanese Nuclear Plant", *eWeek*, April 18, 2011. At http://www.eweek.com/c/a/IT-Infrastructure/Repurposed-iRobot-Military-PackBots-Enter-Damaged-Japanese-Nuclear-Plant-814538/
9. Tim Hornyak (2012), "iRobot Warrior, Pack Bot go to Work at S.C. Nuclear Plant", *CNET*, April 2, 2012. At http://news.cnet.com/8301-17938_105-57408223-1/irobot-warrior-packbot-go-to-work-at-s.c-nuclear-plant/
10. "QunetiQ Sends TALON Robots to Fukushima Nuclear Plant", *Sciencenewline*, April 5, 2011. At http://www.sciencenewsline.com/technology/2011040505590000.html
11. "Xbox 360 Controllers Send Robots into Fukushima Nuclear Plant", *Inhabitat*, April 01, 2011. At http://inhabitat.com/xbox-360-controllers-send-robots-into-fukushima-nuclear-plant/

Sur Accident (INTRA) in France and Kerntechnische Hilfsdienst (KHG) in Germany. Despite the many attempts to optimally operate between the field of robotics and nuclear industries in the world, only Germany and France are known to possess 'at-the-ready robots' that have been architected specifically for nuclear disasters.[12] The French Group INTRA is owned by the Atomic Energy and Alternative Energies Commission (CEA), Areva, a French nuclear company and EDF, an electric company that maintains robots for nuclear accidents. The Unmanned Aerial Vehicle (UAV) manufacturer, Helipse, has dispatched three unmanned helicopters to monitor the situation around the Daiichi nuclear plant in collaboration with the group INTRA. This helicopter was equipped with radiation sensors, infrared thermometers, and cameras.

In order to manage the situation, Germany also arranged to send its indigenously invented robot. The Kerntechnische Hilfsdienst (KHG), a specialised independent organisation whose purpose is to promote nuclear safety at national nuclear power plants since 1977, announced its intention to assist Japan and a truck-mounted concrete pump manufactured by Putzmeister was sent to cool Unit 4 at Fukushima.[13] KHG independently uses robotics to minimise damage at Germany's own nuclear power plant. KHG has been broadly accepted for solving the difficulties in Japan. Mr. Walter Sturz, Director of KHG, stated that they will discuss how to tune the robot's capabilities: "KHG has various items of equipment from the fields of infrastructure, decontamination, radiation protection, and remote-controlled technology, especially remote-controlled manipulator vehicles which can be operated from secure locations outside the danger zone".[14]

The Japanese robot, Quince, was developed by a joint venture of the Chiba Institute of Technology and other institutions. Quince, which was sent into Units 1 and 2 at Fukushima on June 24, is comparably later than other robots. Contrary to the expectation from

12. "T-Hawk MAV, Helicopter Drones Join Japan Effort", *Cnet News*, April 06, 2011.
13. "Germany Offers Japan Robots for Nuclear Clean-up", *DW*, March 31, 2011. Also see, "Putzmeister Truck-Mounted Concrete Pump is Used to Cool Fukushima". March 22, 2011. Putzmeister Concrete Machine Pvt. Ltd. http://www.pmw.co.in/cps/rde/xchg/SID-40075398-3AFA9412/pm_india/hs.xsl/Concrete%20pump%20is%20used%20to%20cool%20in%20Fukushima_ENU_HTML.htm
14. Ibid.

Asimo, which is manufactured by Honda Motor and is a symbolic humanoid, Quince accomplished its missions on October 20, 2011.[15] The Japanese robot, named Moni Robo A, was designed for fire-fighting and had already been deployed. Moni Robo A was expected to remove a large amount of debris and cables that were blown off from the nuclear reactor buildings. However, it was not successful in entering the damaged remnants of the wreck.[16]

ROBOTS IN NUCLEAR ACCIDENTS AND LIMITATIONS

Historically, this is not the first time robots have taken part in a nuclear crisis. The first approach using robotic science was accomplished by a researcher at Carnegie Mellon University after the US' Three Mile Island crisis in 1979. At that time, two robots were provided for disaster relief purposes. The robots were ordered to look around the damaged reactor, sopped up radioactive water and scooped up a portion of melted uranium fuel.[17] The initial attempt was based on reactive and effective task-based robots that were intended for after-accident care. In 1986, robots were known to be used in the Chernobyl accident in the Ukraine that is often referred to as the worst nuclear disaster in history. Unfortunately, the involvement of robots was almost discontinued after a few years due to the costs of developing a business model and the relatively rare occurrence of a nuclear disaster.

At Fukushima, while the use of robots is anticipated to replace workers like the six workers who were sacrificed at the Daiichi nuclear plant, many researchers hope to use a more scientific approach to manage a crisis. Observing various types of robots and stakeholders in participation, several discussions and criticism have evolved both inside and outside the Japanese nuclear crisis. Broadly speaking, the discussions on the role of robotics in nuclear accidents were divided into two aspects this time: the scientific development of robotics and the political decision-making on robotics. Although, the current progress in the robotics industry sheds some light on

15. "Domestic Robots Failed to Ride to Rescue after No.1 Plant Blew", *The Japan Times*, January 6, 2012.
16. "Debris Prevents Robots from Entering Stricken Nuclear Plant", *PCWORLD*, March 31, 2011.
17. "Robots Designed to Deal with Nuclear Accidents Await Duty in Europe While Japan asks: Where are Ours?" *The Washington Post*, March 31, 2011.

disaster management emanating from military needs, there is still a gap between the development and operation of robotics at present in managing disastrous situations. For example, the lack of efficiency of a disaster relief robot is likely to be due to the fact that the robot was initially designed to meet military needs or commercial demand and then redesigned for disaster management. In the case of nuclear accidents, robots need to have radiation-resistant electronic components installed, and these components cannot be found in industrial and commercial robots.[18] Additionally, experts have frequently pointed out the following as examples of a lack of field work: (1) difficulty in real-time and real-situation preparedness; (2) difficulty in designing an all-at-once robot; and (3) the need to build up twin or triple cooperative models for the division of labour.

Secondly, many inside and outside experts who participated in Fukushima raised another reason for the delay in robotic management of the situation. As proved, robots, supplied from iRobot, QinetiQ, and even the Japanese domestic companies and institutions, needed to be trained by TEPCO employees. These employees needed to spend additional time teaching the robot to do the minimum investigation at the nuclear plants. Warrior, PackBot, TALON and Dragon Runner that were dispatched from the US, needed to be well-trained by gamers, who themselves required comprehensive understanding of the operation at nuclear sites. It was shown that senior employees chosen by TEPCO were not efficient in training remote-controlled robots and vehicles in a short time and that is what resulted in the delay in the disaster relief plan.[19] The same issue came up in using the Japanese domestic robot, Quince. As Quince was developed by joint research, TEPCO employees needed an additional three weeks to adjust the operating robot and replace batteries and cable.[20] Hence, one of the issues was how to compensate for the lack of operating skills that result from borrowing machinery, even if international training assistance is offered on how to improve durability and sustainability through proper testing.

18. Sakai Yasuyuki, (2011), "Japan's Decline as a Robotics Superpower: Lessons from Fukushima", *FPIF*, July 12, 2011.
19. "Robots at the Tepco Nuclear Facility in Fukushima, Japan", Everything-Robotic, July 3, 2011. At http://www.everything-robotic.com/2011/07/robots-at-tepco-nuclear-facility-in.html
20. n. 15.

Politically, the importance of robotic science and political leadership has been made evident in Japan. The lack of efficiency in the development of robots and in bureaucratic decision-making has been constantly criticised by foreign and Japanese scientists. Criticism has also been directed against the Japanese government, particularly regarding why the Governors did not take a decision to use robotics technology in this situation. Another question that was raised was about investment in the robotics industry in Japan. As one of the top countries for advanced robot-building technology, Japan has invested a significant amount of money in the robotics industry and the result is robots that work like, instead of for, humans. These robots, called humanoids, talk, dance, play instruments, and so on, but they are not switchable to risk management, such as machines that can work in hazardous places like the Daiichi nuclear plant. Many have argued that these efforts have proved to be costly and have secured no helpful prototypes because a number of robots that were developed in Japan were not ready to be deployed at the time of this disaster.[21]

Such criticism is actually a structural problem in the Japanese robotic industry. In 1999, a critical accident occurred at a nuclear dual processing facility in Tokai. This accident resulted in the death of two workers due to radiation leaks. After this disaster, the Japanese Ministry of Economy, Trade and Industry (METI) granted Yen 3 billion for establishing a "nuclear disaster relief system" in 2000.[22] There have only been three Japanese companies, Mitsubishi, Hitachi, and Toshiba, and one French firm, Cybernetics, that have developed a prototype of 'radiation-resistant robots,' under the Japanese government. However, the project was discontinued after a year by the government, which stopped working on trial and error in hazardous conditions. Hirose Shigeo, a robotic researcher at the Tokyo Institute of Technology (TIT), has argued that Japan should focus more on 'disaster-mitigation robots,' rather than humanoid robots intended for home use.'[23] Although the issue has emerged in Japan, the situation at Fukushima has alarmed many other countries preparing for a similar situation as well.

21. "Japan a Robot Power Everywhere Except at Nuclear Plant", *Reuters*, March 17, 2011.
22. "Domestic Robots Failed To Ride To Rescue After No.1 Plant Blew", *The Japan Times*, January 6, 2012.
23. Ibid.

FUTURE OF ROBOTICS IN DISASTER MANAGEMENT

In response to the increasing role of robotics, the world is paying more attention to the worldwide robotics supply chain with regards to catastrophes as well as for industrial and security purposes.[24] Secondly, as high radiation activity still poses a risk, there is no disagreement about the necessity to build up a technological pathway. Various suggestions have been recommended by scientists, including those who participated in, or observed, other nuclear risk management situations such as the Three Mile Island nuclear incident or the Chernobyl disaster. The demand for robotics in disaster management will inevitably increase as the world experiences other hazardous accidental situations that require more effective planning and training.[25] Hence, what is required is an international joint effort to produce a broad agenda for robotics for both natural and man-made disasters, with special focus on hazardous duty robots aimed at broad humanitarian purposes.

However, the use of robots in a disaster situation seems to be a long way off owing to the cost-affordability of development, the fear of sharing technology having dual-use, and so on. Though a number of countries are developing disaster-relief robots, only a few companies are successfully commercialising the indigenous disaster-specific robots; these include Rechners GmbH in Austria, InRobTech in Israel, Komatsu in Japan, and Hoya Robot in South Korea.[26] As seen in the previous ups-and-downs of planning for disaster relief robots, it is not easy to open and maintain the robot market for specific purposes because, although disasters occur rarely, they have catastrophic consequences.

Optimistically, some expect that competition among states will help to obtain advanced technology in the near future. As seen in the case of Fukushima, these robots are not used only to provide an overview of the situation in a damaged plant but can also be used for 'clean-up tasks'. However, this also brings up the somewhat

24. "Global Sales of Robots to Reach New Heights in 2011", *Vision Systems Design*, March 29, 2011. At http://www.vision-systems.com/articles/2011/03/sales-robots-reach-new-heights-2011.html
25. Ibid.
26. "Nuclear Disaster Robot Disaster 2011", *Robotland*, March 19, 2011. http://robotland.blogspot.in/2011/03/nuclear-disaster-robot-disaster-2011.html

pessimistic view that the gap between the development of robots and the demand in a disaster situation would be difficult to fill. Another point is that the current level of robotics can help only when and where the damage is observed or can to be managed by man. In other words, the machine needs a well-trained operator to receive the contextual information and put that information in the right order.[27]

Overall, it is inevitable that the range of the potentiality and feasibility of robotics' response to natural disasters, terrorist attacks and unexpected disasters of any kind will need to be extended. Though some worry that the robot-human relationship may jeopardise human life, an innovative robotics-based solution is needed for action.

27. "Germany Offers Japan Robots for Nuclear Clean-up", *DW*, March 31, 2011.

ENERGY SECURITY: THE OPTION OF NUCLEAR ENERGY

STUTI BANERJEE

Global energy requirements are increasing and, in the future, they will continue to rise rapidly. Energy as a resource is the core of all human functions and, thus, is of much strategic importance. Energy is no longer just about trade, it is now an issue of state security, at both the international and national levels. The rapid growth of energy requirements is now viewed from the perspective of not just political and economic gains but also of social security and national development. Thus, countries today are increasingly trying to find ways and means to ensure that energy supplies remain undisturbed and the price of energy resources is managed. According to the International Energy Agency (IEA), "Energy security can be described as the uninterrupted physical availability of resources at a price which is affordable, while respecting environment concerns". The aim of this paper is to propose that nuclear energy is a viable option which can be developed as part of the energy mix to protect the energy security interest of states by pointing out some of its benefits, as also looking at the major challenges that it faces.

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NUCLEAR ENERGY AS AN OPTION

It is with a view to securing their respective energy needs that states are increasingly trying to broaden their energy mix. Most nation-states today are in the process of exploring various sources of energy to meet their individual demands. There is also a growing awareness and support for sustainable development—development of the nation that is not detrimental to the environment. Thus, the energy mix being developed by countries includes both renewable and non-renewable resources. However, with the problems associated with non-renewable sources of energy, namely, their eventual depletion and greenhouse gases emission, states are investing in the research and development of renewable sources of energy, namely, solar, wind and hydro power. The advantages of these resources are numerous, including environmental improvement, increased fuel diversity and security, and economic development benefits; nonetheless, solar and wind energy cannot yet meet the base load demands of electricity supply, and hydro power has the capacity to alter or possibly damage the immediate environment.

A growing number of countries are expressing interest in setting up nuclear power plants to add to their respective energy mix. Of the countries that have expressed such an interest in recent years, some are actively considering nuclear power programmes to meet their energy needs and others have expressed interest with the International Atomic Energy Agency (IAEA) in understanding the concerns and safeguards associated with the introduction of nuclear power. The most active perusal of nuclear energy is being done by those countries that have the experience of running at least one nuclear power plant. Having gained the expertise, they are expanding their respective programmes. Thus, while some countries are working towards exploring nuclear energy as a viable option to add to their energy resources, others are expanding their already existing nuclear power capabilities. The projections made by different international organisations indicate significant growth in the use of nuclear power. The IAEA's projections indicate a world total for nuclear electrical generating capacity of between 437 and 542 GW (e) by 2020 and between 473 and 748 GW (e) by 2030. In both high and low projections, the largest growth contribution in the next 20 years is

expected to be in countries with existing nuclear power programmes. (However, all projections by the IAEA and others have a high degree of uncertainty.)[1] The needs that are propelling this growth are similar to the reasons stated above for the development of renewable sources of energy.

Nuclear energy as an option is competitive to all other forms of energy generation and is inexhaustible. The fuel that is required to propel a nuclear power plant—uranium—is found in abundance. While some might say that coal was also found in nature in abundance before its widespread use, uranium is required in much more limited quantities as compared to coal to generate electricity. Uranium, however, has to be processed, enriched and fabricated into fuel elements and about half of the cost is due to enrichment and fabrication. In the assessment of the economics of nuclear power, allowance must also be made for the management of radioactive used fuel and the ultimate disposal of this used fuel or the wastes separated from it. The US Nuclear Energy Institute suggests that for a coal-fired plant, 78 per cent of the cost is the fuel, for a gas-fired plant, the figure is 89 per cent, and for nuclear, the uranium is about 14 per cent, or double that to include all front end costs. With complete combustion or fission, approximately 8 kWh of heat can be generated from one kilogram of coal, approximately 12 kWh from one kilogram of mineral oil and around 24,000,000 kWh from one kilogram of uranium-235. Related to one kilogram, uranium-235 contains two to three million times the energy equivalent of oil or coal.[2] There are, thus, little chances of uranium getting exhausted.

THE CHALLENGES FOR THE OPTION

Achievement of energy security has time and again been stated as the most prominent reason by policy-makers in favour of nuclear energy. They believe that with the advantages of nuclear energy, the problems of any state would be solved. While nuclear energy is

1. IAEA, "International Status and Prospects of Nuclear Power", URL- at http://www.iaea.org/Publications/Booklets/NuclearPower/np08.pdf. Accessed on February 21, 2012.
2. European Nuclear Society, "Fuel Comparison", URL- at http://www.euronuclear.org/info/encyclopedia/f/fuelcomparison.htm and World Nuclear Association, "Nuclear Power Economics", URL- world-nuclear.org/info/inf02.html. Accessed on February 28, 2012

desirable, the development of an energy mix to be able to provide a holistic diversification of energy sources to meet the future needs of a state is essential as nuclear energy faces a few challenges to its growth.

The prospect and growth of nuclear energy depends on a number of factors being achieved. Chief among them is the confidence of the public in nuclear energy. Despite it being a reliable source of energy, the public is still fearful of the setting up of nuclear power plants. The perception is that it would lead to radiation related health and environmental problems, which would be irreversible. What adds to this fear is the very nature of the subject that requires a certain amount of restraint in the information provided to the public. Matters are not helped by media images of mushroom clouds, pictures showing the destruction that was caused by the two atomic bombs which generally accompany articles with 'nuclear' as a subject matter. These representations reinforce the suggestions that nuclear energy is a devastating force. The end result being that the public associates nuclear energy with the destructive powers of a nuclear weapon. To counter these views, a robust public relations dialogue has to be developed by all countries that intend to establish nuclear power plants. The public has to be made aware of the difference between a weapons programme (an uncontrolled reaction) and a nuclear energy project (an extremely controlled reaction), the safety mechanisms incorporated in a power plant and the contingency plans in place. The only way to do that would be to disseminate as much information as possible about the working of a nuclear power plant while answering the concerns of the public. To remain viable as a source of energy, it is vital that concerns regarding safety and security are addressed.

It can be brought to the notice of the public that a nuclear plant has one of the lowest impacts on the environment surrounding the power plant. It produces less emission than thermal power plants, the most widespread of fuel resources, isolates its waste from the environment, and requires a relatively small amount of land, in comparison to the electricity it produces. Having said that, the public should also be made aware of the fact that the process of mining the uranium as well as the process of extracting it from the ore, the transportation of

the fuel to the power station and the enrichment itself are, as of now, not very environment friendly processes. In reality, only the reactor operation is carbon free. According to independent studies as well as studies conducted by the IAEA, the carbon emission is sensitive to the quality of the grade of uranium ore used. Nonetheless, as stated, it does produce less emissions than a coal-based power plant.

The other major factor that poses a problem with regards to nuclear energy is the issue of dual use of its technology. The challenges to non-proliferation, according to opponents of nuclear energy, have increased as the number of countries expressing the desire to develop nuclear energy has gone up. What has further compounded the problem is that no country that is using nuclear energy has yet been able to establish a site to dispose of its nuclear waste. Reprocessing waste reduces the volume but the byproduct—plutonium—a source of nuclear weapons production, creates proliferation fuel. Some express the fear that nuclear energy reactors might be used to produce the raw material that is used in nuclear weapons. They also point out that the radioactive waste that is generated might be diverted by states to develop weapons. It is true that nuclear enrichment and reprocessing facilities used to produce fuels for peaceful reactors can be used just as easily to make fissile material for bombs.[3] However, there is a presupposed understanding that countries would abide by the rules and regulations set up by international agreements, organisations and precedents, to limit the spread of nuclear technology to countries that are proliferators. It is also assumed that countries would not divert the technology from peaceful to weapons use. The fact that a majority of the countries that use nuclear energy don't have enrichment or reprocessing facilities of their own and have to buy fuel from external suppliers could be a possible hindrance. Supplies can be halted in the case of breach of agreement on non-proliferation. Very few countries have threatened to, or have diverted, their peaceful nuclear reactors to military use.

NO HALT DUE TO THE FUKUSHIMA ACCIDENT

It is a widely held belief that the nuclear energy sector has suffered

3. Charles Ferguson, "Think Again: Nuclear Power", *Foreign Policy,* Special Issue, November 2011, p. 52.

a major setback as a result of the Fukushima Daiichi accident. While one cannot deny that the accident did lead to a review by all states of the safety of their nuclear power reactors, it would be false proposition that the accident has halted the growth of the nuclear energy industry. Safety and security are primarily the responsibility of each sovereign state. However, the IAEA has a strong role to play, because an accident or malicious act may have far-reaching and cross-border consequences.[4] The factors that were propelling the growth of nuclear energy before the accident continue to be present even after the accident, namely, energy security and environmental concerns. The United States' Energy Information Administration (EIA) has estimated that world energy growth will rise by about 87 per cent as world population grows. In such a situation, countries would look at nuclear energy and its expansion to bridge the gap, even while reducing the use of fossil fuel resources and expanding the ratio of renewable fuels.

Some commentators also point out that the two previous accidents—the Three Mile Island accident in the United States and Chernobyl in the Soviet Union—had been followed by predictions of nuclear energy witnessing a complete halt. However, one finds that nuclear energy continued to be used, and, in fact, its use expanded. They feel that while the industry would not halt production, it would have to weather the consequences that emerge from the post-Fukushima safety reviews.

Nuclear energy development will also continue to witness significant growth in the future as the growth is largely driven by the demand that will be generated by India and China. The fact that these two countries are in the process of making nuclear energy a significant part of their future energy mix would mean that nuclear energy in the next two decades will be an active contributing source of energy. With these two countries driving the demand, other countries will also be willing to explore the option of nuclear energy in response to rising fossil fuel costs.

India's commitment to nuclear energy remains strong as it continues with its plans to develop plants to achieve sustainable

4. Yukiya Amano, "Nuclear Power in the 21st Century", IAEA, URL- Yukiya Amano. Accessed on February 27, 2012.

development. Currently, some 40 per cent of the country's 1.2 billion citizens have no access to electricity, and 40 per cent of those who do, enjoy it for only a few hours each day. A significant portion of generated power is lost due to inefficient and leaky transmission networks. At present, the average Indian's electricity use is just 750 kWh per year, compared to a global average of 2,752 kWh per year.[5] India, with 20 nuclear reactors already in operation, plans to spend an estimated $150 billion adding more new ones around the country. Its forecast calls for nuclear power to supply about a quarter of the country's electricity needs by 2050, a ten-fold increase from now.[6] Mainland China has 14 nuclear power reactors in operation, more than 25 under construction, and more about to start construction soon. Additional reactors are planned, including some of the world's most advanced ones to give a five- or six-fold increase in nuclear capacity to at least 60 GWe by 2020, then 200 GWe by 2030, and 400 GWe by 2050.[7] With a view to securing their interests in energy affairs, the two countries are investing heavily in the development of nuclear energy technology.

With the increasing global presence of China and India becoming visible, they are being acknowledged as key drivers of policy in the region. Considering that the two countries have yet to achieve their full potential given the human resources they have, the fact that they are continuing to invest in the nuclear energy industry is, perhaps, going to urge other countries to follow. There is also the possibility of the two countries in the future collaborating on nuclear energy technology, as both try to achieve similar goals.

While India and China are investing in nuclear energy, France and the United States have the largest number of nuclear reactors between them. France generates close to 75 per cent of its electricity needs from nuclear energy based on its policy of energy security.

5. World Nuclear News, "Nuclear: The Fuel For Energetic Indian Growth", URL-http://world-nuclear-news.org/NP_Nuclear_the_fuel_for_energetic_Indian_growth_2202121.html. Accessed on February 27, 2012.
6 Heather Timmons and Vikas Baja, "Emerging Economies Move Ahead With Nuclear Plans," *The New York Times,* March 14, 2011, URL-at http://www.nytimes.com/2011/03/15/business/energy-environment/15power.html?pagewanted=all. Accessed on February 20, 2012.
7. World Nuclear Association, "Nuclear Power in China", URL- at http://www.world-nuclear.org/info/inf63.html. Accessed on February 21, 2012.

It also exports this energy to the United Kingdom. France is the world's largest net exporter of electricity due to its very low cost of generation, and it gains over Euros three billion per year from this. France has been very active in developing nuclear technology. It is building its third generation reactor at one site and is in the process of planning a second one.[8] Reactors and fuel products and services comprise a major export. It is highly unlikely that France, despite the claims of the hopeful opposition candidate for the presidency, would completely give up on nuclear energy. It would cause the closure of an industry, leading to loss of jobs of thousands of people. Europe's energy needs, to a large extent are supplied by Russia. This is a cause of worry for most nations. Russia in the past has stopped the supply of natural gas in peak winter due to non-payment of dues. Given this situation, it is highly unlikely that France would give up nuclear energy. The other states of Europe also face a similar dilemma.

The United States, on the other hand, has not built a new nuclear reactor in the past 30 years; however, it has recently approved the licensing of two new reactors and has been extending the licence of nuclear power reactors as they expire. America is the world's largest producer of nuclear power, accounting for more than 30 per cent of worldwide generation of nuclear electricity. The country's 104 nuclear reactors produced 807 billion kWh in 2010, over 20 per cent of total electrical output.[9] The American Energy Secretary, Steven Chu, has made it very clear that nuclear power would continue to be part of the energy mix of the country. While it is cautious, the accident would not halt the commitment of the United States towards nuclear energy. All of these countries are also large exporters of nuclear fuel and related technologies. Thus, to come to the conclusion that nuclear energy is not going to recover from the devastation of Fukushima is untrue.

CONCLUSION

While there is a need to develop renewable sources of energy, nonetheless, nuclear energy could be used to bridge the gap between

8. World Nuclear Association, "Nuclear Power in France", URL- It is building its first Generation III reactor and planning a second. Accessed on February 27, 2012.
9. World Nuclear Association, "Nuclear Power in USA", URL-at http://www.world-nuclear.org/info/inf41.html. Accessed on February 27, 2012.

supply and demand. To overcome the resistance nuclear energy is facing, the nuclear industry has to come up with a robust approach to nuclear safety. This has to be reflected in certain factors, including improved design, better operating procedures, a strengthened and more effective regulatory environment and the emergence of a strong safety culture. The IAEA promotes an integrated approach to nuclear safety, focussing on management systems, effective leadership and safety culture. It is important that countries' safety and security infrastructures keep pace with developments in all the areas of nuclear science and technology. It has to develop a dialogue with the public—the end users. The issues of waste disposal and environmental impact cause anxiety among the people who would continue to inhabit areas around the nuclear power plants and information about the same from the authorities would help build trust. Countries have to work together to achieve innovation in nuclear energy. They need to take cooperative interest in research and development, while maximising energy efficiency, reduce risks to the environment and ease the burden on future generations of having to deal with nuclear waste. What is needed in the future is the development of new nuclear technologies which can generate electricity at competitive prices, with improved safety and reduced construction times and operating costs.[10] It is not the intention of this paper to propose that nuclear energy is the solution to the problems of carbon emission and energy insecurity that states might face in the future. Nonetheless, a well designed nuclear power plant is not only safe, reliable, technologically capable but also a durable and competitive source of energy on strategic and economic grounds. Nuclear energy can be a part of the solution that states are looking for to resolve the above mentioned issues.

10. Amano, n. 4.

JOINT TASK FORCE, AIR POWER AND OPERATION NEPTUNE SPEAR

INDRANI TALUKDAR

Controversies like the legal and ethical aspects regarding the death of Al Qaeda top leader Osama bin Laden are not the focus of this article. The focus is on the importance of joint force operations and in these, the role of air power. Despite Osama bin Laden's Operational Security (OPSEC) measures whereby he avoided using the phone and e-mail; was concerned with, and careful about, technical surveillance such as aerial photography, satellites, and "chips" as also human threats, including "traitors," and Iran and Pakistani intelligence, and even locals, he could not avoid death. He was always concerned about Signals Intelligence (SIGINT), Imagery Intelligence (IMINT) and Human Intelligence (HUMINT), and had devised the "art of clandestine courier delivery": his courier would meet the courier of the intended recipient in a tunnel or a "roofed section of a market,"

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preferably on an overcast day, to avoid US surveillance.[1] But all Bin Laden's measures failed to protect him against US technology.

The contours of warfare have changed with the significant advances that warfare has made with the evolution of firepower and weapons. The characteristics of warfare in the 21st century have altered. It is no longer fought in the conventional manner of the 20th century and the two World Wars. Warfare has evolved with time. It can be defined in the categories of five generations. These are first generation warfare, second generation warfare, third generation warfare, fourth generation warfare and fifth generation warfare.

Modern warfare in the 21st century has evolved as a result of political, economic, social, and technological changes that have occurred over time in societies. The rise of nation-states in the modern era brought the evolution of first generation warfare. Each generation represents a dialectically qualitative shift in the methods of waging war.[2]

First generation warfare was driven by the ideas of linear tactics of column and line.[3] It comprised the earliest stages of organised, state-controlled armed forces waging war in the modern era. It can be traced to the invention of gunpowder, which produced the first military formations and tactics cued to firearms. First generation warfare was an offensively-oriented type of war, where light weaponry, limited-size armies, and horse and foot mobility provided limited strategic

1. Liam Collins, "The Abbottabad Documents: Bin Ladin's Security Measures", *CTC Sentinel*, vol. 5, Issue 5, May 2012, pp.1-4, especially pp.2-3, at http://cryptome.org/2012/05/obl-abbottabad-docs.pdf. Accessed October 12, 2012. Surveillance and reconnaissance have been important air power missions ever since the beginning of military aviation. In recent years, the traditional understanding of surveillance and reconnaisssance has been challenged by the emergence of the concept of intelligence, surveillance and reconnaissance or ISR as a single integrated activity and the resultant convergence of tactical and strategic missions. The recent operational experience indicates that ISR is now a critical air power role that incorporates both the traditional and singular aspects of surveillance and reconnaissance. In modern times and with modern requirements, ISR does both strategic and tactical work, along with surveillance and reconnaissance, which operates across the wide spectrum of conflict and levels of war. "What is ISR? Challenging Traditional Paradigms", *Pathfinder*, Air Power Development Centre Bulletin, issue 129, March 2010.
2. "The Architect and Fifth Generation Warfare", *The Strategist*, June 4, 2006, at http://www.thestrategist.org/archives/2006/06/the_architect_o.html. Accessed on June 22, 2012.
3. Franklin C. Spinney, "Defense Death Spiral", *Archive of Defense Communications*, September 1998, pp.1-67, at http://pogoarchives.org/labyrinth/01/05.pdf. Accessed on June 22, 2012, and here p.5.

mobility—armies walked everywhere— but some modest tactical mobility was possible with small armies unencumbered by extensive heavy weaponry. This era culminated in the Napoleonic Wars of the early 1800s, and warfare began to change dramatically by the middle of the 19th century essentially due to the impact of the Industrial Revolution. By the time of the US Civil War, the advent of advanced transportation and communications systems, combined with heavier mobile firepower, signified the emergence of a new model—second generation warfare.[4] First generation warfare was characterised, on the whole, by a battlefield of order which created a military culture of order.[5] In time, this battlefield changed.

It has been in the realm of non-traditional warfare that the maximum discussions and fervour for new forms of warfare have emerged. The post Cold War era saw the emergence of what was referred to as the fourth generation warfare. Whereas third generation warfare consisted of modern manoeuvre warfare between organised military forces of states, fourth generation warfare reflected a post Cold War era, dominated by non-linear operations between state and non-state actors. The plethora of intra-state conflicts during the 1990s gave rise to the terms 'low intensity conflict' and 'sub-conventional warfare'. In the last decade, terms such as 'asymmetric warfare' have emerged to describe the rise of transnational threats such as terrorism. More recently, terms such as 'irregular warfare'[6], 'complex

4. David W. Barno, "Challenges in Fighting a Global Insurgency", *Parameters*, Summer 2006, pp.15-29, http://www.carlisle.army.mil/usawc/parameters/Articles/06summer/barno.pdf. Accessed on June 22, 2012, p.16.
5. William S. Lind, "The Four Generations of Modern War", at http://www.lewrockwewarfare ll.com/lind/lind26.html. Accessed on June 22, 2012.
6. Irregular warfare includes counter-terrorism, insurgency support, counter-insurgency, shaping and deterring, and a number of other non-conventional war-fighting techniques. In this warfare, operations typically use conventional military forces against an unconventionally formed, but complex, adaptive adversary, with a structure that reflects the manifold sources of their origin—be it nationalism, ideology, ethnic tensions or religious fanaticism, etc. The US armed forces have defined Irregular Warfare as a violent struggle between state and non-state actors for legitimacy and influence over the relevant population (s). This warfare favours indirect and asymmetric approaches, though it may employ the full range of military and other capacities, in order to erode an adversary's power, influence and will. ("The Reality of Air Power and Irregular Warfare: What's in a Name? 'Irregular Warfare and 'Counterinsurgency'", *Pathfinder*, Air Power Development Centre Bulletin, issue 120, September 2009). Irregular warfare becomes difficult for a military force which largely is equipped and trained to wage traditional inter-state war. ("Air Power and Collateral Damage: The Strategic Effect", *Pathfinder*, Air Power Development Centre Bulletin, issue 126, January 2010).

irregular warfare' and 'hybrid wars'[7] have not only surfaced but have represented the new face for warfare. Interestingly, this warfare is increasingly characterised by combating the ideologically-motivated irregular forces which depend on asymmetry, terrorism, guerrilla tactics, insurgencies and criminal activities that threaten a nation-state's national security interests in diverse ways. Meanwhile, the adversaries of non-state actors have embraced tactics like fighting a war of survival; democratic societies have largely detached themselves from the concept of fighting such wars unless they are pushed to the extreme.[8] The May 2011 Abbottabad US Navy Sea, Air Land Teams (SEALs) operation is proof of that push, though the reasons behind it are varied.

Hybrid wars have gained considerable support in the US as an alternative to describe the new convergence of warfare between state and non-state forces wherein there is a blurring of the modes of conflict. The use of hybrid warfare, a combination of irregular and conventional tactics, has increased with time to confront a superior conventional force.[9]

Some people now talk of the wars in Iraq and Afghanistan having taken warfare into the fifth generation. This generation of warfare has involved individuals attacking individuals. Mostly, the terrorists have taken up this type of warfare against the state players. This type of warfare stresses upon the study of the human anatomy in order to identify vulnerable areas and the use of martial arts and exercises to utilise tactics such as stabbing, arson, car bombs and cutting the brake lines on automobiles. It stresses on the use of narcotics such as cocaine and heroin as weapons, and on available poisons as well. Along with all the above, it also stresses upon ways to conduct intelligence/counter-intelligence against the police and infiltrate local police departments. This type of warfare makes use of Improvised Explosive Devices (IEDs), vehicle-borne IEDs, homicide bombers or suicide bombers and more. Fifth generation warfare would go on to involve seemingly

7. "Irregular Warfare and Air Power", *Pathfinder*, Air Power Development Centre Bulletin, issue 107, March 2009.
8. "Air Power and Collateral Damage: The Strategic Effect", *Pathfinder*, Air Power Development Centre Bulletin, issue 126, January 2010.
9. Ibid.

spontaneous and anonymous attacks against random citizens and/or law enforcement professionals with no other goal than to cause confusion and fear.[10]

Countries like China have started to train their paratroopers to cope with this generation of warfare. China has already started with martial arts training to its troopers in order to tackle such attacks. The 95 sniper rifles and JS 9MM submachine guns are some of the weapons equipped for this type of warfare. China, along with the US, the European countries and others have top-notched their technology in every area of their military defence. For example, the US uses drone attacks through Unmanned Combat Aerial Vehicles (UCAVs)[11], third generation aircraft fitted with with Airborne Early Warning and Control Systems (AEWCS)[12], fourth generation aircraft and fifth generation aircraft fitted with precision guided systems like laser guided bombs[13] and other sophisticated weaponry to tackle the adversaries in this generation of warfare. These weapon systems are handled by extremely skilled and professional masters like the US Navy SEALs. Therefore, it can be said that war no longer has forms restricted to state versus state that is, force-on-force war..

With the changing nature of warfare, further evolution can be seen within the three Services through sophisticated weapon systems. This evolution enhances a nation's capabilities and capacities regarding its national security. For instance, the US Navy SEALs and the role they played in the Abbottabad issue is an apt example to explain the above. The US Navy SEALs are the US Navy's principal special operations force and a part

10. Frank Borrelli, "5th Generation Warfare?" pp.1-5, and p.1 and 4, at http://www.projectwhitehorse.com/pdfs/7a.%205th%20Generation%20Warfare.pdf. Accessed on June 27, 2012.
11. UCAVs Fitted With Electro Optical, Thermal and Infrared (IR) Systems (Jasjit Singh, "Unmanned Air Vehicles: Transformation of Air Power", *An Independent Study Report,* CAPS/Projects/2005, September 20, 2008, p.30) help in identifying adversaries through the Positive Identity Detection (PID).
12. Home grown terrorists and non-state actors being supported by governments have been proving to be a menace for a country itself as the air force cannot be used due to the ethos involved. (In conversation with Shiv Ram Krishnan Pandey on July 10, 2012.)
13. For example, during the Kargil War 1999, the Mirage and Jaguar aircraft fitted with laser guided bombs helped in dragging out the Pakistani adversaries. (In conversation with Air Marshal P.V. Athawale, PVSM, AVSM, VSM, Distinguished Fellow, Centre for Air Power Studies on July 10, 2012.)

of the Naval Special Warfare Command (NSWC) and Special Operations Command (SOCOM). They comprise the United States Naval Special Warfare Development Group (also known as DEVGRU[14] or SEAL Team Six).They come under the United States Special Operations Command (USSOCOM) which is the Unified Combatant Command charged with overseeing the various SOCOM of the army, air force, navy and marine corps of the United States armed forces. In the war on terror, the SEALs have been utilised almost exclusively for land-based operations, including direct action, hostage rescue, counter-terrorism, special reconnaissance, unconventional warfare, manhunts and foreign internal defence operations. This special group was exclusively used during the highly sensitive operation in killing the top Al Qaeda leader Osama bin Laden. The operation was given the code-name "Operation Neptune Spear",[15] and was commanded by US President Barack Obama. In addition to DEVGRU, the participating units during this operation included the US Army's 160th Special Operations Aviation Regiment (Airborne) and Central Intelligence Agency (CIA) operatives.

The 160th Special Operations Aviation Regiment (Airborne) is a unit of the United States Army that provides helicopter aviation support for general purpose forces and special operations forces. Its missions have included attack, assault, and reconnaissance, and are usually conducted at night, at high speeds, low altitudes, and at short notice. The 160th Regiment is also known as the Night Stalkers. This group consists of the army's best-qualified aviators and support soldiers.

The operation was planned by the CIA, with troops being prepared for their mission by training at the Harvey Point Defence Testing, a CIA training base in North Carolina that mirrored bin

14. They report to the President and operate worldwide based on the legal (or extra-legal) premises of classified presidential directives. Marc Ambinder, "The Secret Team That Killed bin Laden", *National Journal*, May 3, 2011, at http://nationaljournal.com/whitehouse/the-secret-team-that-killed-bin-laden-20110502. Accessed on October 12, 2012.
15. The official mission code-name was *Operation Neptune Spear*.[3] Neptune's spear is the trident, which appears on the Navy Special Warfare insignia, with the three prongs of the trident representing the operational capacity of SEALs on sea, air and land.

Laden's compound.[16] The CIA had used surveillance photos and intelligence reports to determine the identities of the inhabitants of the Abbottabad compound. Involved in the mission in the early morning hours of May 2, 2011, were 79 commandos who arrived in military helicopters from Jalalabad, Afghanistan The US National Geospatial-Intelligence Agency (NGA) had helped the Joint Special Operations Command create mission simulators for the pilots and analysed data from an RQ-170 drone before, during and after the raid on the compound. It exploited the electromagnetic spectrum to track terrorists and decipher the signatures of enemy radar. The NGA created three-dimensional renderings of the house, created schedules describing residential traffic patterns, and assessed the number, height and gender of the residents of the compound.[17]

The US did not leave any loopholes during this operation. The CIA also used a process called "Red Teaming" on the collected intelligence to independently review the circumstantial evidence and available facts of their case regarding the compound where Bin Laden was living. In the US Army, *Red Teaming* is defined as: "structured, iterative process executed by trained, educated and practised team members that provides commanders an independent capability to continuously challenge plans, operations, concepts, organizations and capabilities in the context of the operational environment and from US partners' and adversaries' perspectives."[18] The Red Team provides commanders with critical decision-making expertise during planning and operations. The team's responsibilities are broad—from challenging planning assumptions

16. Olga Khazan, "Bing Maps Reveal CIA Training Facility in the Lead-up to bin Laden's Death", *The Washington Post Blog* Post, October 10, 2012, at http://www.washingtonpost.com/blogs/blogpost/post/bing-maps-reveals-cia-training-facility-in-the-lead-up-to-bin-ladens-death/2012/10/10/1401bf1a-12d9-11e2-a16b-2c110031514a_blog.html. Accessed on October 12, 2012. Whistleblower site Cryptome.org, shows a bird's eye view of the site in North Carolina, near the CIA's Harvey Point Defence Testing Activity facility in Perquimans County. "CIA's Bin Laden Raid Training Facility Snapped on Satellite Maps - in the Exact Same Layout as Pakistan Compound", *Mail Online*, October 10, 2012, http://www.dailymail.co.uk/news/article-2215429/Osama-Bin-Laden-raid-CIA-training-facility-shown-satellite-maps-layout-Pakistan-compound.html. Accessed on October 12, 2012.
17. Marc Ambinder, "The Little-Known Agency That Helped Kill Bin Laden", *The Atlantic*, May 5, 2011, http://www.theatlantic.com/politics/archive/2011/05/the-little-known-agency-that-helped-kill-bin-laden/238454/. Accessed on October 12, 2012.
18. Marcus Spade, "Army Approves Plan to Create School for Red Teaming", *TRADOC*, July 13, 2005, http://www.tradoc.army.mil/pao/tnsarchives/July05/070205.htm. Accessed on October 12, 2012.

to conducting independent analysis to examining courses of action to identifying vulnerabilities. Armed with all the information and after a lot of analysis to reduce collateral damage near the compound, US President Barack Obama, along with the National Security Council, decided to use the helicopter raid. A team was assembled which was drawn from the Red Squadron, one of four that make up DEVGRU. The purpose behind using this squadron was to evade any attention from the adversary. The squadron was already coming back to the US from Afghanistan and could be redirected without attracting attention. The team was already specialised in language skills and experience with cross-border operations into Pakistan. The helicopters which were used in the raid had been designed to be quiet and to have low radar visibility. Pakistan's defensive capabilities were known to the US as the Pakistanis had been equipped and trained with sophisticated US weapon systems.[19]

The Two Black Hawk and Chinook helicopters used in the operation had special features. During the raid, a highly modified version of the UH-60 Black Hawk was used. The features include a modified tail section with extra blades on the tail rotor and other additions which significantly lowered the noise levels. It also has hard edges, with stealth features similar to those of F-117 that enabled it to evade Pakistan Air Force radars. The aircraft included features like special high-tech materials and flat surfaces, found only on sophisticated stealth jets, which helped the commandos in carrying out the operation surreptitiously. The stealthy helicopter used a "special coating" on its windshield to scatter radio waves.[20] The special coatings to the skin to absorb radar beams and the replacement of sharp edges on the helicopter with curved ones reduced the radar reflections, making the helicopters more difficult to be picked up by air defence radars, especially since the helicopters would have flown at very low levels and often in the valleys during the ingress and exit. The curves could scatter the reflections of other radar beams in too many directions for an air-defence system to put together a coherent picture of the plane. The latest modifications on the helicopter seemed similar to plans for the stealthy Comanche

19. "Death of Osama bin Laden", Wikipedia. Accessed on October 12, 2012.
20. David Axe, "Aviation Geeks Scramble to ID bin Laden Raid's Mystery Copter", May 4, 2011, at http://www.wired.com/dangerroom/2011/05/aviation-geeks-scramble-to-i-d-osama-raids-mystery-copter/all/1. Accessed on October 12, 2012.

helicopter of the 2004 project which was later stalled.[21]

US Special Forces, in addition to satellite photographs, had also relied on Predator and Reaper drones in Iraq and Afghanistan to provide videos showing the number of people living in a compound and their patterns of activity. In Abbotabad, they did not use the Predators and Reapers as they would have been easier for almost any air defence system to track.[22] Another reason for not using the Predators was to avoid collateral damage. In fact, during this raid, the US made careful use of air power by distinguishing whether aircraft or drones or helicopters would be appropriate. The very fact that the US did not use Predators with Hellfire missiles proves the point of careful and appropriate use of air power.[23]

The Abbottabad operation proved American military power, the power in the joint task force and also its air power. It shows that a country's national interests depend on gaining and maintaining the freedom to manoeuvre its air, land and maritime forces in the places and at times of its choosing and also restricting adversaries from doing the same. Through the application of air power, the air campaign provides the joint force with speed, flexibility, responsiveness, reach and perspective which was proved during Operation Neptune Spear. The joint task force is usually used to achieve military objectives through the application or threat of force in support of national policy. This force is called upon to deter or defeat attacks, contribute to stability and security at both national and global levels.[24] The killing of Osama bin Laden is bound to be a deterrent for the insurgent groups regarding the capabilities of the defence forces. If the countries of the world can come together with their enhanced military capabilities through advanced technology to counter this modern unconventional warfare—call it hybrid or fourth and fifth generation warfare—the war on terror can be successful and peace can prevail throughout the world.

21. Christopher Drew, "Attack on Bin Laden Used Stealthy Helicopter That Had Been a Secret", *The New York Times*, May 5, 2011, at http://www.nytimes.com/2011/05/06/world/asia/06helicopter.html. Accessed on October 12, 2012.
22. Ibid.
23. Carolyn Lochhead, "Bin Laden Data not had by Torture, Feinstein Says", *SFGate* (*San Francisco Chronicle*), May 3, 2011, http://www.sfgate.com/news/article/Bin-Laden-data-not-had-by-torture-Feinstein-says-2372809.php
24. "The Air Campaign and the Joint Task Force", *Pathfinder*, Air Power Development Centre Bulletin, issue 172, February 2012.

CONCLUSION

In fact, the power of military force, specially with high technology weapons and systems in any country, is always more powerful than any insurgent or non-state actor. Merely a week before his death, Osama bin Laden had asserted, despite witnessing the death of many top Al Qaeda leaders, "Reality has proven that American technology and its sophisticated systems cannot arrest a Mujahid if he does not commit a security error". Although Bin Laden followed the OPSEC measures which, according to him would have helped in evading US detection,[25] he was proved wrong with Operation Neptune Spear which was of high sophistication and brought about his end.

Meanwhile, modern governments have recognised the special utility of air power as a practical instrument that can freely wield air assets in pursuit of national interests, objectives and policies.[26] With advanced air power, a nation can project its will over an adversary. This will is reinforced by the employment of the forces available to a nation. For instance, in air power, the two primary factors within the national infrastructure that are needed to generate it are, first, availability of appropriate technology and the will of the nation to use it optimally, air power being a technology-based and enabled capability. Second, is the challenge of adequate resource allocation.[27] Operation Neptune Spear confirms the capability of US air power and the power of the joint task force which was delivered by the US Special Task Force under the Navy SEALs. The success of this campaign should be a model for defence forces' future strategies aligned with the national strategies, with more fine-tuning in training and capabilities for operations against insurgents who are restricted to a specific area or compound. This campaign also proved that a powerful country can take action against any country that shows unwillingness to cooperate The decision to keep Pakistan unaware and out of the operation is proof of the US ability to impose its will on other countries.

25. Liam Collins, "The Abbottabad Documents: Bin Ladin's Security Measures", *CTC Sentinel*, vol.5, issue 5, May 2012, pp.1-28 and p.1.
26. "The RAAF in Non-Military Operations", *Pathfinder*, Air Power Development Centre Bulletin, issue 134, May 2010.
27. Sanu Kainikara, "An Element of National Power" in Sanu Kainikara, ed., *Essays on Air Power* (Australia: Air Power Development Centre, 2012), p.2.

IRANIAN NUCLEAR CRISIS: IMPACT ON IRAN-ARAB COUNTRIES RELATIONS

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Though Iran is not an Arab country, it has been an integral part of the Arab world because of its geographical location, their economic interdependence, and belief in, and practice of, the same religion (Islam). However, relations between Iran and these countries have never been stable; rather, they oscillate from acrimony to cooperation, and vice versa. The Iran-Arab countries relations have been marred by geographical disputes, religious sectarian conflicts and the search for regional power hegemony. Of late, the politics of the region has been overshadowed by the Iran nuclear crisis, and the political upheaval in the Arab world. This article briefly analyses the impact of the Iran nuclear crisis on Iran-Arab countries relations.

AMERICA'S IRAN POLICY

Iran has been accused by the US and its allies of seeking a nuclear arsenal for a very long time. The US even went to the extent of demonising Iran by clubbing it in the "Axis of Evil" along with Iraq and North Korea, giving an impression that Iran posed a real

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and dangerous threat to the peace and security of the Gulf region, in particular, and the world at large, in general. However, the truth is that the Iranian nuclear programme is not of recent origin—the programme had been launched in the 1960s with assistance from the US. According to Alireza Jafarzadeh, former Media Director for the Washington, D.C. office of the Parliament-in-exile (the Iranian dissident group), the National Council of Resistance of Iran (NCRI), Iran's nuclear programme took off with the US giving the Shah of Iran "a five-megawatt (MW) light-water research reactor and laboratory equipment [in the 1960s], all of which was installed at the Tehran Nuclear Research Centre (TNRC) at Tehran University."[1] The signing of a civil nuclear cooperation agreement between Iran and the US in 1957 as part of the US' "Atoms for Peace" programme[2] was an indication of the US' active involvement in the development of the Iranian nuclear programme.

The nuclear programme which began in the 1960s, received a further boost with the Shah of Iran unveiling "his nuclear energy development programme in March 1974," wrote Anton Khlopkov, Deputy Director of the PIR Centre. He further added, "This program envisioned the construction of 23 nuclear reactors with an overall capacity of around 20 MW and the creation of a closed nuclear fuel cycle."[3] Incidentally, amidst all these developments, the world oil prices suddenly surged, thereby, enormously increasing the wealth of the oil producing countries. The Iranian government took advantage of the "enormous oil wealth" and negotiated with different countries like France, the United States and West Germany "for the purchase of over a dozen large nuclear power plants."[4] A recent news report indicated that China and Pakistan's nuclear scientist, Abdul Qadeer Khan, too, had provided "nuclear secrets" to Iran.

1 Alireza Jafarzadeh, *The Iran Threat: President Ahmadinejad and the Coming Nuclear Crisis* (New York: Palgrave Macmillan, 2007), p. 129.

2. Iran Nuclear Watch, "Iran Nuclear Timeline," August 1, 2006, at http://irannuclearwatch.blogspot.in/2006/08/iran-nuclear-timeline.html. Accessed on March 23, 2010.

3. Anton Khlopkov, "Iran's Nuclear Program-An Unfinished Story," in Alexei Arbatov, *At the Nuclear Threshold: The Lessons of North Korea and Iran for the Nuclear Non-Proliferation Regime* (Moscow: Carnegie Endowment for International Peace, 2007), p. 31.

4. Leonard S. Spector and Jacqueline R. Smith, *Nuclear Ambitions: The Spread of Nuclear Weapons 1989-1990* (Boulder: Westview Press, 1990), p. 204.

Iran has acknowledged its uranium enrichment programme, but claims that it is exclusively for peaceful (energy) purposes, and, in order to allay suspicions and make its stand clear, Iran allowed the International Atomic Energy Agency (IAEA) to carry out safeguards inspection and Design Information Verification (DIV) at the Bushehr Nuclear Power Plant, Esfahan Nuclear Technology Centre (ENTC), Karaj Nuclear Research Centre for Agriculture and Medicine, Natanz Uranium Enrichment Plant and Tehran Nuclear Research Centre (TNRC) on a number of occasions. Moreover, Iran is a signatory of all the major multilateral disarmament agreements like the Conventions on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction (1972) and the Prohibition of Chemical Weapons (1993).[5] The Iranian nuclear programme has generated considerable debate among, and caused tension in, the comity of nations. Yet, the surprising fact about Iran's nuclear programme is that the IAEA has not found any substantial credible evidence indicating that Iran is producing nuclear weapons (weapons of mass destruction) till date.

Nonetheless, in pursuit of its policy to restrict and constrict Iran's economy (to deny Iran the resources to further its nuclear programme), the US imposed various sanctions like the Iran-Libya Sanctions Act (ILSA) of 1996, Comprehensive Iran Sanctions, Accountability, and Divestment Act of 2010 (CISADA, P.L.111-195), Iran-Iraq Arms Non-proliferation Act (P.L.102-484) and Iran Non-proliferation Act (P.L.106-178) (renamed as Iran-Syria-North Korea Non-proliferation Act), etc. A series of executive orders passed by the policy-makers of the US banning all trade with, and investment in, Iran created considerable economic and policy problems for Iran, yet, Iran did not relent. It did not bow down to external power

5. Iran had signed the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction on April 10, 1972 and ratified it on July 22, 1973. It had also signed the Prohibition of Chemical Weapons Convention on January 13, 1993, which was ratified on November 3, 1997, and came into force on December 3, 1997. See Organisation for the Prohibition of Chemical Weapons, "OPCW Member States," at http://www.opcw.org/nc/about-opcw/member- states/?tx_ opcwmemberstate _pi1[sortField]=0&tx_opcwmemberstate_pi1 [sort Reverse] =0&tx_opcwmemberstate_ pi1 [pointer]=0&tx_opcwmemberstate_pi1[ASP_PAGE]=1; and Status of the Convention, at http://www.opbw.org/convention/status.html. Accessed July 1, 2011.

pressure because "Iran's nuclear program, particularly the retention of an indigenous fuel cycle," according to Jerrold D. Green and others of the RAND Corporation, "has attained a symbolic resonance comparable to that of then-Prime Minister Mohammad Mossadegh's nationalization of Iranian oil production in 1951. In both cases, energy resources encapsulate the large themes of modernity sovereignty, self-sufficiency, and non-submission to Western control."[6] Similarly, Anton Khlopkov wrote, "Iran views the development of nuclear technology as not only a deterrent, but also as a symbol of national prestige and an attribute to regional hegemony in the Middle East and, ultimately, even of leadership throughout the whole Muslim world."[7]

In February 2007, President Mahmoud Ahmadinejad in his address to the people of the Iranian northern province of Gilan reiterated that the country is determined to uphold its decision to continue its peaceful nuclear programmes and "will resist the oppressors and will not concede one iota."[8] A similar opinion was voiced by Iran's Supreme Leader Ayatollah Ali Khamenei in his inaugural address at the Non-Aligned Movement (NAM) Summit held recently at Tehran, on August 30, 2012. He said, "The Islamic Republic of Iran considers the use of nuclear, chemical and similar weapons as a great and unforgiving sin…This does not mean forgoing our right to peaceful use of nuclear power and production of nuclear fuel."[9] Such statements bring us to the conclusion that stonewalling Iran on the nuclear issue will not bring about any amicable solution; rather, it will further aggravate the issue.

THE ISLAMIC COUNTRIES' RESPONSE TO IRAN's NUCLEAR ISSUE

What is interesting about the Iranian nuclear programme is that unlike the attempt to produce an "Islamic bomb" by Pakistan in the 1970s, which was enthusiastically supported by almost all

6. Jerrold D. Green, Frederic Wehrey, Charles Wolf, Jr., *Understanding Iran* (Santa Monica, RAND Corporation, 2009), pp. 28-29.
7. Khlopkov, n. 3, pp. 47-48.
8. "President Says Iran Stands Firm on its Nuclear Rights," February 23, 2007, at http://www.president.ir/en/3277. Accessed April 3, 2012.
9. Indrani Bagchi, "Nuke use a 'Sin', But Iran won't Blink on N-Power," *The Times of India* (New Delhi), August 31, 2012.

the Islamic countries of the world, including Saudi Arabia and Libya, one witnessed the expression of significant differences on this programme. Most of the Islamic countries, specially the Gulf countries are apprehensive that "Iran's growing regional influence and nuclear resolve could lead to one of two dreadful outcomes: a regional war or a grand bargain with the US that would subordinate their interests to an Iranian hegemony in the region."[10] At the same time, some countries of the region have also expressed concern about the possible widespread implications on their countries, if a Chernobyl-like nuclear disaster (1986) were to ever take place in the Iranian nuclear sites, specially the Bushehr Nuclear Power Plant, because this is geographically closer to some of the Arab countries like Bahrain, Kuwait, Qatar and Saudi Arabia than to Iran's capital, Tehran. In the light of this background, some Arab countries have even urged the US to take punitive action against Iran. Ian Black and Simon Tisdall quoting the US Embassy Cables Wikileaks report, wrote about Saudi King Abdullah repeatedly urging the US "to attack Iran to put an end to its nuclear weapons programme."[11] Another Wikileaks cable report stated that Abu Dhabi Crown Prince Sheikh Mohammed bin Zayed al Nahyan reportedly told the US Treasury Secretary Timothy Geithner in one of their meeting that economic "sanctions would never be sufficient to stop Iran" from developing its nuclear programme. In the same meetings, Abu Dhabi Foreign Minister Sheikh Abdullah bin Zayed al Nahyan had urged the US to send a "clear and forceful" message to Iran, by mobilising more international and regional organisations like the P+5+1 and GCC+3 to "increase pressure and isolation."[12] Besides, various other countries of the region, including Bahrain and Jordan, too, were reported to have pressed the US to stop the Iranian nuclear programme by "whatever

10. Emile Hokayem, "Arab Silence is no Substitute for Policy on a Troubled Iran," January 27, 2010, at http://www.thenational.ae/news/arab-silence-is-no-substitute-for-policy-on-a-troubled-iran#full; and "Iran Ssays Bahrain Causeway Plot Claim 'Baseless,'" at http://www.arabianbusiness.com/iran-says-bahrain-causeway-plot-claim-baseless--429943.html. Accessed March 18, 2012.
11. Ian Black and Simon Tisdall, "Saudi Arabia Urges US Attack on Iran to Stop Nuclear Programme," November 28, 2010, at http://www.guardian.co.uk/world/2010/nov/28/us-embassy-cables-saudis-iran. Accessed September 1, 2012.
12. 09ABUDHABI736, "Crown Prince Sounds Alarm on Iran," Embassy Abu Dhabi, at http://cablesearch.org/cable/view.php?id=09ABUDHABI736&hl=hell+iran+uae. Accessed September 5, 2012.

means necessary."[13] Iraq, Iran's uncongenial neighbour, even raided an unfinished Bushehr nuclear power plant in November 1987, forcing Amrollahi, President of Iran's Atomic Energy Organisation to send an "urgent protest note" to the then Director General of the IAEA, Hans Blix, "[A]sking him to rush a team of experts to the scene to monitor the effects of the raid."[14]

On the other hand, countries like Indonesia, Lebanon and Syria including some Emirates of the UAE, specially Dubai, do not support the American theory that the Iranian nuclear programme is a threat to their country's security. The Arab American Institute surveyed brought out an interesting report which stated that while most of the countries of the region expressed caution and apprehension on Iran's nuclear programme, the majority in Lebanon believes that West Asia "would be more secure if Iran was a nuclear power."[15] Professor Dr. Din Syamsuddin, Vice Chairman of the Indonesian Council of Ulama too reportedly told a *Tehran Times* correspondent on the sidelines of the 21st International Conference on Islamic Unity in Tehran, in May 2008, that the Iranian nuclear developments do not threaten Indonesia—rather, the Indonesian government is "supportive of the activities" because they "believe that [Iranian nuclear] project is for peace and is meant for development of science and technology."[16] Syria, a close ally of Iran, is another country that openly came out in support of Iran's right to a peaceful nuclear programme and even voted against reporting Iran to the United Nations Security Council, along with Cuba and Venezuela, at the crucial IAEA Board of Governors meeting in February 2006.

Another interesting development that took place in the region was that while most of the countries of the world severed their trade relations with Iran under the pressure of the US, Dubai, the UAE's second largest Emirates after Abu Dhabi, become "a

13. Quoted in Black and Tisdall, n. 11.
14. "Iran Says Iraqis Raided a Nuclear Plant, " *The New York Times*, November 18, 1987, at http://www.nytimes.com/1987/11/18/world/iran-says-iraqis- raided-a-nuclear-plant.html?src=pm, Accessed August 29, 2012.
15. Ed Attwood, "Gulf Attitudes Towards Iran Nosedive, Poll Shows," July 28, 2011, at http://www.arabianbusiness.com/gulf-attitudes-towards-iran-nosedive-poll-shows-412890.html. Accessed January 8, 2012.
16. Quoted in "U.S. Becoming 'World Police': Indonesian Scholar," *Tehran Times*, May 7, 2008, at http://old.tehrantimes.com/index_View.asp?code=168014. Accessed March 18, 2012.

convenient conduit for other countries' business with Iran", leading to a huge increase in Dubai's Iran trade. As many as 8,000 Iranian traders and trading firms were registered in Dubai, and in the early part of the year 2011, the "re-export trade between Iran and the UAE—goods send to the UAE for on-shipment to Iran, and Iranian goods sent to the UAE for on-shipment to other countries—totaled AED 19.5 bn ($5.32 bn)."[17] Dubai continues its trade relation with Iran unceasingly, notwithstanding the claim of Youssef al-Otaiba, the UAE's Ambassador to the United States, that the UAE's armes forces "wake up, dream, breathe, eat, [and] sleep [with] the Iranian threat."[18]

THE EXTERNAL POWERS INGENIOUS POLICY

The US, having failed to repress Iran, provided significant economic and military aid to the other Gulf countries to develop power parity with Iran and contain Iranian influence in the region. For example, the US policy-makers are fully aware that Dubai (the second largest Emirate in the UAE) plays an important role in Iran's economic development, thus, they tried to entice it to preserve US domination over Iran's most important neighbour and strategically located Gulf country, the UAE. For this reason, the US gave "clearance to buy America's most advanced air defence system, the Terminal High Attitude Air Defence Systems" to the UAE in 2008, as part of the US "economic stimulus package." Karim Sadjadpour of the Carnegie Endowment for International Peace wrote that the UAE was "the first foreign nation" to receive such clearance. With the US-UAE relations reaching a new, high level, the UAE imported arms worth about $3 billion from the US in 2009, further increasing this to $5 billion in 2010.[19]

17. "Dubai Traders Fear Sanctions Will Hurt Iran Business," December 1, 2011, at http://www.arabianbusiness.com/dubai-traders-fear-sanctions-will-hurt-iran-business-432926.html: For a brief analysis of Iran-UEA relations, see Karim Sadjadpour, *The Battle of Dubai: The United Arab Emirates and the U.S.-Iran Cold War*, The Carnegie Papers, Middle East July 2011, at http://carnegieendowment.org/files/dubai_iran.pdf. Accessed April 2, 2012
18. Quoted in Ibid. Notwithstanding the fact that Dubai-Iran trade relations witness a stiff raise, the UAE had closed about 40 Iranian companies in 2007, because of the pressure from the US. For a brief report on Iran-UAE trade relations, see Shayerah Ilias, "Iran's Economy," *CRS Report for Congress*, Updated June 12, 2008, at http://fpc.state.gov/documents/organization/107234.pdf. Accessed January18, 2012.
19. Sadjadpour, n. 17.

The US, continuing its policy to pinion Iran, indicted two Iranians, Manssor Arbabsiar, a naturalised US citizen, and Gholam Shakuri, an Iran-based member of Iran's Qods Force, alleging that they were involved in a plan to assassinate the Saudi Arabia Ambassador to Washington, Adel al-Jubeir, through a Mexican drug cartel in 2011.[20] Iranian leaders strongly countered the US allegation as "false" and "fabrication." Iranian President Mahmoud Ahmadinejad even accused the US of levelling false allegations against Iran "to occupy" the West Asian region, "and to dominate oil resources so that by seizing the wealth of regional countries," the US could "solve their own economic crisis."[21] Not only the Iranian leaders, but many strategic security analysts too were sceptical of the US allegation. Professor Dilshod Achilov of the East Tennessee State University, expressed doubts that "Iran would choose to take the risk" of assassinating the Saudi Arabia Ambassador in Washington. He was of the view that the Iranian government would not take such a risk "unless the assassination was too important for Iranian national security...For Iran, to undertake such a risk, the issue had to be bigger, with wider implications."[22]

While the world community actively engaged in trying to find an amicable solution to the contentious Iran nuclear issue, there were report which stated that "the UK government is beating the drums of war against Iran" by the dispatch of the UK's Royal Navy warship to the Persian Gulf. Iran's Navy Chief, Habibollah Sayyari considered this action of the UK as a direct challenge to Iran's national security and threatened to shut down the Strait of Hormuz, "the world's most important oil chokepoint" in December 2011. Sayyari was reported to have said, "Closing the Strait of Hormuz for Iran's armed force

20. U.S. Department of Justice, "Two Men Charged in Alleged Plot to Assassinate Saudi Arabian Ambassador to the United States," October 11, 2011, at http://www.fbi.gov/newyork/press-releases/2011/two-men-charged-in-alleged-plot-to-assassinate-saudi- arabian-ambassador-to-the-united-states. Accessed September 4, 2012.
21. Iran Terror Plot: Iran's Senior Leadership Strongly Rejects Allegation," October 14, 2011, at http://www.iranpolitik.com/2011/10/14/news/iran-terror-plot-iran%E2%80%99s-senior-leadership-strongly- rejects-allegations/. Accessed March 18, 2012.
22. Palash R. Ghosh, "Iran and Saudi Arabia: Intractable Enemies Engaged in a Deadly Power Struggle," October 15, 2011, at http://www.ibtimes.com/articles/231828/20111015/iran-saudi-arabia-us-china-bahrain-russia-sanctions- murder-plot.htm. Accessed May 21, 2012.

is really easy ... it will be easier than drinking a glass of water."[23] Taking serious note of Sayyari's statements, the Bahrain-based US Fifth Fleet which monitors Iran's activities in the Gulf region, warned Iran of serious consequences if it "disrupts freedom of navigation in an international strait."[24]

Israel is another country that is strongly opposed to the Iranian nuclear programme. Israeli leaders feel that Iran is on the verge of becoming nuclear capable and threaten to strike Iran, if it doesn't refrain from further such developments. Israeli Prime Minister Benjamin Netanyahu, reiterating Israel's stand to contain the Iranian nuclear programme, told his Cabinet on August 12, 2012, that "Iran must not be allowed to obtain nuclear weapons."[25] However, the world community, including the US, in reality does not seem to be interested in a full fledged war with Iran as they know that escalating the crisis in the Gulf region will be "unhelpful and counter-productive."

IRAN'S ARAB POLICY

Since the Iranian government faces considerable policy problems because the world community has conspicuously isolated it, Iran's President Mahmoud Ahmadinejad ingeniously referred to the Persian Gulf nations as "neighbors, brothers and co-religionists," with the aim to win over the Arab countries. He urged the countries of the region to expand good diplomatic relations with each other so as to bring peace, tranquillity and development in the region.[26] Fortunately for Iran, at the time of heightened tensions in the region, Iranian President Mahmoud Ahmadinejad was invited by Qatar to attend the annual summit meeting of the Gulf Cooperation Council (GCC). What is interesting about the GCC is that it was formed to "counterpoise" Iran's power during the Iran-Iraq War. President

23. Quoted in PressTV, "UK's HMS Daring: A Moving Target for Iran," January 9, 2012, at http://presstv.com/detail/220152.html. Accessed June 14, 2012.
24 Parisa Hafezi and Humeyra Pamuk, "U.S. Fifth Fleet says Won't Allow Hormuz Disruption," December 28, 2011, at http://www.reuters.com/article/2011/12/28/us-iran-hormuz-closure-idUSTRE7BR09E20111228. Accessed August, 8, 2012
25. "Iran Threat Dwarfs Others: Israel PM," *Hindustan Times* (New Delhi), August 13, 2012, p. 12.
26. "President: Expansion of Ties in the Region Benefits Peace and Tranquility," February 25, 2007, at http://www.president.ir/en/3275. Accessed March 18, 2012

Ahmadinejad took advantage of the opportunity that this provided Iran to rebuild its diplomatic relations with the Gulf Arab countries, and attended the GCC meeting which was held in Doha, Qatar, in December 2007. This event marked an important development in Iran's Arab relations, not only because President Ahmadinejad was the first Iranian President to take part in the summit meeting of the GCC, but also because of the GCC's changed attitude towards Iran "from one of bloc-like containment to accommodation."[27] Following President Ahmadinejad's visit to Doha, Iranian Foreign Minister, Dr. Ali-Akbar Salehi visited Kuwait, Qatar and the UAE as part of Iran's continuing campaign to build cordial relations with the Arab countries. Iran also organised the 21st International Conference on Islamic Unity in Tehran in May 2008, to bring the Islamic countries into a common political platform. The *Tehran Times* reported that the Expediency Council Chairman, Akbar Hashemi Rafsanjani, exhorted the delegations (scholars and clerics) who came from more than 45 countries that "Islamic [countries] unity is a necessity for the Islamic world," not only to bring peace and cooperation among them, but also for the Muslims to emerge as "a real power" in world politics. Rafsanjani was reported to have further stated, "Division among Muslims is the best gift for the enemies of Islam."[28]

Amid all these developments, the political upheaval in the Arab world took place, thereby further hindering the diplomatic relations between Iran and the Arab countries. In February 2012, Iran's Ambassador to Lebanon, Ghazanfar Roknabadi, conscious of the deterioration of Iran relations with other Islamic and Arab countries, elucidated that Iran's foreign policy "is [based] upon honor, justice, peace, friendship and development of bilateral relations with all Islamic and Arab states"[29] Yet, despite Iran taking extra initiatives to enhance its diplomatic relations with the Arab countries, no significant change can be observed.

27. Frederic Wehrey, Theodore W. Karasik, Alireza Nader, Jeremy Ghez, Lydia Hansell, Robert A. Guffey, *Saudi- Iranian Relations Since the Fall of Saddam: Rivalry, Cooperation, and Implications for U.S. Policy* ((Santa Monica: RAND Corporation, 2009), p. 49.
28. 21st International Conference on Islamic Unity Opens," *Tehran Times*, May 5, 2008, at http://old.tehrantimes.com/index_View.asp?code=167833. Accessed March 18, 2012
29. Iran for Good Relations with Islamic Arab Countries: Envoy," February 15, 2012, at http://irna.ir/News/Politic/Iran-for-good-relations-with-Islamic,-Arab-countries,-Envoy/30818249. Accessed June 21, 2012.

CONCLUSION

Iran's foreign policy has mostly been influenced by the political developments taking place in the Arab world, because, though it is not an Arab country, it has been an integral part of the Arab world. However, in view of the fact that Iran has the largest population in the region, is geographically larger, and an "overwhelming majority" of its population is Shia, the other Gulf (Arab) countries are always suspicious of Iran's activities. The other (Arab) countries of the region being dominated by Sunnis, keenly observe the activities of the religious minority in their countries, specially the disturbances that arise from the Shia minority group, who share religious affinity with Iran, and they unanimously adopt plans and policies to counter this. However, there is a conflict of interest even among the Arab countries on the Iranian nuclear issue. Some Arab countries consider the proliferation of the Iran nuclear programme as a serious threat to their country's security, while some others do not consider it as the most important issue for the region, thus, adopt a policy contradictory to that of the others. Notwithstanding the differences on the Iranian nuclear issue, almost all the countries of the region do not want another war to occur in the region because of the Iran nuclear crisis, as the people of the region have suffered the colossal impact of war for many years.

Today, the politics of the region is in a state of flux. The Iranian nuclear crisis, followed by the Arab upheaval, has collectively contributed to turning the region into a war zone. There is an urgent need of peace and development in the region to save it from further deterioration. However, to bring about peace, stability and development, the countries of the region need to rise above intra-regional political interests, come together and adopt a more realistic policy for the region. Long-term peace and stability cannot be achieved without the active support and cooperation of all the countries of the region, because the internal and external security and socio-economic development of the countries of the region are explicitly intermixed.

CHINA'S TAWANG TEMPTATION

SANA HASHMI

In the 19th and 20th centuries, nobody would have envisioned that once humiliated and semi-colonised China would be the cause of distress for the major countries of the world such as the United States, Japan and India, in the 21st century. Since the establishment of the People's Republic of China (PRC) in 1949, China has, over time, evolved into an impressive economic and military power. It won't be erroneous to say that India is one of the oldest victims of China's expansionist policies and the boundary dispute between the two ancient civilisations have been intact since the time of their existence as independent and modern states. In the contemporary times, the India-China boundary issue is one of the most protracted disputes. There are many facets to the India-China relations, of which, the boundary issue is the most important and crucial. Intriguingly, India is the only country with which China has not yet resolved its boundary differences. The boundary conflict, which has been considered as a potential flash point between the two Asian giants, gained prominence with the 1962 India-China War. The disagreement over the boundary led to a brief but bloody war between India and China in 1962, the result of which was the loss of Aksai Chin, an isolated part of Ladakh in Jammu and Kashmir (J&K), bordering Pakistan, to China. After

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occupying a large tract (approximately 38,000 sq km) of Aksai Chin, China built a highway (National Highway 219) through it to connect it with its eastern province of Xinjiang which India considers as illegal occupation.[1] As a consequence of the war, the India-China ties got strained and the two countries normalised their diplomatic relations only in 1976. Nonetheless, after 10 years, in 1986, Chinese and Indian patrols began confronting each other in Sumdorong Chu Valley of Tawang district of Arunachal Pradesh, just east of Bhutan which touched off a border crisis which continued for a few months, with both sides refusing to back down, stepping up their patrols in the disputed area and moving substantial military forces to the region.[2]

The basic problem is two-fold. In the undefined northern part of the frontier, India claims an area the size of Switzerland, occupied by China, for its region of Ladakh and in the eastern part, China claims an Indian-controlled area three times bigger, including most of Arunachal.[3] Interestingly, China has always been of the opinion that the common boundary between India and China had not been formally delimited and, therefore, needed to be negotiated between the two governments, and, if necessary, settled through joint surveys; the Indian government claims the McMahon Line as the valid boundary between India and China.[4] Though the discontent with regard to delineation of the boundary had been simmering for a long time, the boundary dispute erupted openly on August 25, 1959, when then Indian Prime Minister Jawaharlal Nehru disclosed in Parliament that the Chinese military has intruded into the Subansiri frontier of India and captured Longju.[5] The complexity of the problem can be judged by the fact that since 1981, nearly 40 rounds of negotiations have taken place between the two countries at different levels, with

1. "Why China Claims Arunachal Pradesh", available at http://www.rediff.com/news/2006/nov/16sld1.htm. Accessed on September 26, 2011.
2. V. G. Kulkarni, "Eyeball to Eyeball on the Himalayan Border," *Far Eastern Economic Review*, April 9, 1987, pp. 38-40.
3. "India and China's Territorial Disputes: Taking the High Ground", available at http://www.economist.com/blogs/banyan/2010/08/india_and_chinas_territorial_disputes. Accessed on January 26, 2012.
4. Ministry of External Affairs, Government of India, Report of the Officials of the Governments of India and the People's Republic of China on the Boundary Question (New Delhi, 1961), pp. 233, 110-115.
5. A. G. Noorani, *India-China Boundary Problem 1846-1947: History and Diplomacy* (New Delhi: Oxford University Press, 2011), p. xiii.

little progress made. Recently, the trade ties between India and China have improved significantly, with the historic Silk Route through Nathu La being opened in 2006; however, the unresolved territorial issue remains a thorn in the flesh.

INDIA-CHINA RIVALRY OVER TAWANG

A.G. Noorani in his book *India-China Boundary Problem 1846-1947: History and Diplomacy* has claimed that India acquired a boundary problem with China in 1846 when Britain added the state of J&K to its empire and acquired a latent boundary problem with China in the east after gaining independence.[6] The territorial dispute on the northeastern front between India and China is attributed to the McMahon Line, drawn between British India and Tibet and has been a frontier between China-controlled Tibet and northeastern India since 1914; in fact, it made what is today known as Arunachal Pradesh, a part of India. At that time, Arunachal Pradesh was not a state; it was incorporated in India as a territory, and till the 1980s, it was known as North-East Frontier Agency (NEFA) which was created in 1955. The McMahon Line was a result of the Simla Accord in 1914, initiated by British India, Tibet and China. Though it was ratified by British India and Tibet, in the later stages, China refused to ratify the treaty on the grounds of difference of opinion regarding the boundaries of Tibet since China always recognised Tibet as its own part. China has been opposing and challenging the very legitimacy of the Line on the ground that it was signed by erstwhile Tibetan officials who had no authority to do so, since Tibet is an inalienable part of China. It also claims that it was a British ploy to weaken and humiliate China, and regards it as a constituent of British imperialism.[7] Later, China claimed that the Tawang region, which was shown as part of India after the demarcation of the McMahon Line, has been part of Tibet for centuries and, hence, belongs to China. The Chinese uphold that the disputed territory in the eastern sector is historically Tibetan land encroached upon by British imperialism and then turned over to the Indian heirs of the British Empire.[8] Of late, China has been putting

6. Ibid., p. 1.
7. Surya P.Sharma, "The India-China Border Dispute: An Indian Perspective", *The American Journal of International Law,* vol. 59, no. 1, January 1965, pp. 16-47.
8. John W. Garver, "Sino-Indian Rapprochement and the Sino-Pakistan Entente", *Political Science Quarterly,* vol. 111, no. 2, Summer 1996, pp. 323-347.

across the historical fact of the 6th Dalai Lama having been born in Tawang in the 17th century as evidence of the Tawang region being part of Tibet, and thereby part of China. Moreover, Tawang is the centre of Tibet's Buddhist culture, with one of the biggest Tibetan monasteries outside Lhasa and, traditionally, its ethnic Monpa inhabitants offered fealty to the Tibetan rulers.[9] China cites the Tawang Monastery, one of the last vestiges of Mahayana Buddhism, as evidence that the mountainous district of Tawang in Arunachal Pradesh once belonged to Tibet and that India should hand it back to help settle the dispute.[10] This also is in consonance with China's 'One China theory'. India has always countered the Chinese claims and the see-saw game of claims and counter-claims has been going on for decades.

A territorially, ravenous country, that used to lay its claim of sovereignty only over Tawang, has expanded the claim from Tawang to the entire state of Arunachal Pradesh, as affirmed by then China's Ambassador to India, Sun Yuxi, in his statement in 2006. He claimed, "The whole of the state of Arunachal Pradesh is Chinese territory. And Tawang is only one of the places in it. We are claiming all of that. That is our position.''[11] This assertion led China to claim over 90,000 sq km of Indian territory in the northeastern front.

The problem aggravated when China started issuing stapled visas to the citizens of Arunachal Pradesh, stating that they did not need to apply for visas to come to their own country, which further riled the Indian government. Every now and then, there have been various reports of the issue of stapled visas and denial of visas to the residents of Arunachal Pradesh; the most recent one was that of denying a visa to the youth delegate from Arunachal Pradesh for the programme under the design of *Year of India-China Friendship and Cooperation* in mid-2012. Furthermore, China has always protested against the visits of the 14th Dalai Lama and, for that matter, of Indian leaders, to Arunachal Pradesh. In 2009, the visit by Indian Prime Minister Manmohan Singh triggered tensions between India

9. Same as n.1.
10. "Arunachal is Chinese Land: Envoy" available at http://ibnlive.in.com/news/arunachal-is-chinese-land-envoy/26108-3.html. Accessed on January 26, 2012).
11. "Arunachal Pradesh is out Territory: Chinese Envoy", available at http://www.rediff.com/news/report/china/20061114.htm. Accessed on October 23, 2011).

and China. The then Foreign Ministry spokesperson of China, Liu Jianchao, was quoted as saying on October 13, 2009, that China was "seriously dissatisfied" by the visit of the Indian Prime Minister, who was accused of "ignoring China's concerns by visiting southern Tibet" and further termed the visit "provocative and dangerous".[12] The 14th Dalai Lama's visit to Tawang in November 2009 invited a similar protest from the Chinese side. Beijing criticised the visit as undermining Chinese territorial integrity and slammed the Dalai Lama's "scheme to wreck China's relations" with India.[13]

STRATEGIC IMPORTANCE OF TAWANG FOR INDIA AND CHINA

The strategic importance of Tawang for both countries is immense. The tactical location of the region, coupled with its rich natural resources and fresh water, makes it one of the most important regions for both India and China. China repeatedly terms Tawang as Indian-Occupied Territory and refers to it as Southern Tibet.[14]

The question to be asked is: why has China been hell-bent to claim Tawang? The answer is not that complex if the situation is analysed pragmatically. With Tawang under its control, China can get closer to the Indian states of the northeastern region, and also thwart India's attempt to become a major power of the world. Additionally, this gives China unhindered access to Bhutan, a neighbouring country, with which China has trifling differences over the border. It will also bring China closer to other Southeast Asian countries, satisfying China's expansionist need as the fastest growing economy in the world. Occupation of the passes in Ladakh, by China has ensured that India cannot launch an offensive to cut off the Western Highway.[15] If China occupies Tawang, the Indian approach from the eastern sector will also be severed. On February 14, 1979, when then India's Minister

12. "How To Counter China on Arunachal Pradesh" available at http://www.rediff.com/news/column/how-to-counter-china-on-arunachal-pradesh/20091014.htm. Accessed on November 17, 2010.
13. "Dalai Lama Visits Arunachal Pradesh", available at http://in.reuters.com/article/2009/11/08/idINIndia-43780920091108. Accessed on November 2, 2012.
14. Sujit Dutta, "Managing and Engaging Rising China: India's Evolving Posture", *The Washington Quarterly Post*, Spring 2011, p. 131.
15. Sheru Thapliyal , ''Sino-Indian Border Impasse: Strategy for Resolution'' , *CLAWS Journal,* Summer 2010, p. 206.

for External Affairs, Atal Bihari Vajpayee, visited Beijing, he was told by China's former paramount leader Deng Xiaoping that the eastern sector is of economic value and the area of the biggest dispute.[16]

Likewise, from the Indian perspective, Arunachal Pradesh is an important region. Arunachal Pradesh acts as a buffer between India and the Tibet Autonomous Region (TAR), thus, providing the much needed strategic depth against China. Additionally, India cannot afford another setback like 1962, when China attacked India in the western and eastern sectors, including Tawang, Thagla ridge and Tseng-jong, and the Indian Army was humiliated due to lack of preparedness and the naive assumption that China would not become aggressive.[17] The Tawang region borders China-controlled Tibet and acts as a barrier between the two nuclear powers. It is like a floodgate, which holds up the advent of the Chinese military might. Moreover, Tawang also has economic and religious significance and is a major tourist destination for Buddhists due to the location there of the biggest Buddhist monastery outside Lhasa. Furthermore, Arunachal Pradesh is one of the four states of northeastern India which share a border with Myanmar; hence, it is India's gateway to Southeast Asia and crucial for India's Look East Policy.

CHINA'S GAIN, INDIA'S MISTAKES

The biggest mistake India has ever committed in its long history was to recognise Tibet as a part of China. China is claiming Arunachal Pradesh solely on the basis of Tibet being under its control. Recognition of Tibet as an autonomous part of China by Jawaharlal Nehru in 1953 and then Atal Bihari Vajpayee in 2003, in the hope that China would give up its claim on other Indian territories, added credibility to its claim. Sadly, in practical terms, India has no big card to play in the border negotiations that had sold out Tibet to China and it is now paying the price of potentially losing territories in this mutual adjustment deal, which was an outcome of Nehru's failed foreign policy of appeasing China and still prevails in the Indian diplomatic book of wisdom.[18] As A.G. Noorani, in another book

16. n. 4, p. 230.
17. Neville Maxwell, *India's China War* (Dehradun: Natraj Publishers, 1997), p. 356.
18. "Tibet is India's Legitimate Ticket to Claim Arunachal", available at http://www.rediff.com/news/column/tibet-indias-legitimate-ticket-to-claim-over-arunachal/20091109.htm.

of his, *Our Credulity and Negligence,* has rightly pointed out, that Nehru was credulous about China's intentions and neglected India's defence; his policy of appeasement proved to be disastrous.[19] Nehru faulted only with respect to China—he tragically misjudged the Chinese intentions and policies towards India.[20] It will suffice to state that India wanted to avoid escalation of tension in all circumstances; otherwise denunciation of the McMahon Line by China was good enough reason for India to keep its apprehensions alive. Even after the invasion of Tibet, India recognised Tibet as China's autonomous part instead of taking the matter more seriously. A major flaw in India's foreign policy was that since independence, greater emphasis was laid on problems with Pakistan. India was always obsessed with its next door neighbour, Pakistan, and trusted China. However, China has always been systematic with regard to its policies. It took advantage of India's blind faith in China and went step by step: first, it invaded Tibet and established its foothold there, and then it expanded its paws to Tawang.

The 1962 War and subsequent claims by China on Indian territories shattered the trust of Nehru; moreover, the so-called *Hindi-Chini Bhai Bhai* slogan (Indians and Chinese are brothers) met a tragic fate. Nehru signed the Panchsheel Treaty 1954 with China, which was an agreement on trade and intercourse between the Tibet region of China and India, in the hope that China would adhere to the provisions of the treaty. However, since the very beginning, China took the agreement lightly and barely followed its provisions. Surprisingly, the treaty was never renewed.[21]

The importance of this region cannot be overemphasised, but India, for the last few decades, has somehow understated this. There has been a lack of a strong diplomatic and even security policy to counter the Chinese claims in this region. India has lacked the assertive approach in putting forward its stand, which is evident from its lukewarm responses to dozens of Chinese incursions along the border annually. This lack of assertiveness and strong response

19. A. G. Noorani, *Our Credulity and Negligence* (Bombay: Ramdas G. Batkal, 1963), p. 142.
20. Michael Brecher, "Nehru's Foreign Policy and the China-India Conflict Revisited", *Pacific Affairs,* vol. 50, no. 1, Spring 1977, pp. 99-106.
21. Notes, Memorandum and Letters Exchanged and Agreements Signed Between the Governments of India and China: 1954- 1959 (New Delhi, 1959) p. 98.

can be gauged by the hapless condition and absence of proper infrastructure in the border regions of northeastern India, particularly Tawang. The transport and military infrastructure on the Indian side, lags far behind to that on the Chinese side. Infrastructure is an essential element in the defence of the country as it can prove to be the turning point, should there be a war between these two nations. It demonstrates clearly that India's policies and strategies towards resolving the dispute are full of defects, ignorant assumptions and erroneous decisions which proved to be favourable for China but catastrophic for India.

CONCLUSION

Interestingly, the border talks and joint working groups have yielded little result so far. Neither did the visit of then Prime Minister of India Rajiv Gandhi, along with the setting up of joint working groups on boundary issues. P. V. Narasimha Rao's initiative of the 1993 agreement for Maintaining Peace and Tranquillity along the Line of Actual Control in the India-China Border Areas also did not make any substantial progress. China is still reluctant to give up its claim and find an amicable solution to the dispute. So far, the India-China relationship has been one of competitors and partners at the same time. Although India is more active and has been persuading China to reach a cordial and agreeable solution to the border dispute, both have adopted a two-pronged strategy while dealing with each other. On the one hand, both are firm on their respective stand, and, on the other, they maintain affable relations with each other and to some extent, their economic interests overshadow their national interests, leading to a situation of deadlock. Since the 1950s, China has been employing the same strategy with all the claimants involved in all its territorial and maritime disputes. China is simply buying time in order to consolidate its claims and strengthen its military capabilities. However, it is in the best interest of both countries to resolve this matter on priority and focus on issues which will lead to prosperity and harmony in the region. But as of now, this seems far from reality and, to a great extent, unthinkable. However, both countries are maintaining status quo, while escalating their military capabilities and presence of military

troops on the border areas. India needs to be more vigilant about China's actions and along with China, it should strengthen its relations with other countries of Asia. Moreover, it is high time India improved its border infrastructure to make it at least at par with that of the Chinese. India, for long, has ignored the people of the northeast; instead of deploying a large number of troops and converting Arunachal into a completely militarised area, India should establish enhanced connectivity with the northeast and take initiatives to make the people of the northeast feel less alienated. India is fortunate enough to have a card called the 14th Dalai Lama and the Tibetans in-exile in India, though mostly it has been hesitant to use it. It should take advantage of the presence of the Tibetans on its land and use it as a bargaining chip, as and when needed.

Moreover, internationalisation of the issue by India would be an appropriate option for India and would substantiate the legality of the McMahon Line. Though it is certain that another 1962 won't recur, since India is in a better position than ever before, there are chances of relations getting strained over the boundary problem. India's hegemony has been established in South Asia which leads most of its South Asian neighbours to view India as a dictator. It has become a prerequisite for India to improve its relations with the South Asian countries so that China does not take advantage of India's somewhat precarious relations with its immediate neighbours.

Unlike China, India's posture on the McMahon Line has been lucid and unambiguous. At this time, it remains to be seen what the strategies of the new leadership in China would be. Is it going to follow the legacy of the previous leaders, with the deadlock continuing or is it going to adopt a new strategy vis-à-vis the border dispute resolution? What is quite clear is that the new leaders, along with new border negotiators, will certainly take time to get accustomed to the problem and the dispute will continue for a long time, but if everything goes right, the chances are that both sides will start negotiations on an unsullied turn, with the hope of a speedy resolution. India needs to remember that Tibet is still very much on the scene and is bound to have an effect on the further course of action, as it comprises a priority matter for the new leadership. The leadership transition in China is certainly a hopeful event for

India, and it will be advisable for India to take up the matter with the new leadership, with a firm stand and a great sense of urgency. Nevertheless, eloquence on the matter and establishing trust is the need of the hour and at the same time, the key challenge in India-China relations with regard to the border conflict.

UNDERSTANDING PRIVATISATION OF SECURITY IN THE 21ST CENTURY

SWATI KUNDRA

Any community's arm of force – military, police, security – needs people in it who can do the necessary evil, and yet not be made evil by it. To do only the necessary, and no more. To constantly question the assumptions, to stop the slide into atrocity.

— Lois McMaster, *Barrayar, 1991.*

Standing armies (miles perpetuus) shall be abolished in the course of time.

— Immanuel Kant, *Perpetual Peace.*

INTRODUCTION

'National security'[1], which comprises the terms "nation" and "security", is the requirement to maintain the survival of a nation-state, for security is one of the basic human necessities[2], and, hence, cannot be compromised. It has its origin in the 'Treaty of Westphalia'[3] which

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1. National security is an elusive concept. As such, there is no universally accepted definition of the term 'national security'.
2. Prabhakaran Paleri, *National Security: Imperatives and Challenges* (New Delhi: Tata McGraw-Hill Publishing Company Limited, 2008), p. 33.
3. Anthony McGrew, "Globalization and Global Politics" in J. Baylis, S. Smith and P. Owens, eds., *The Globalization of World Politics* (New York: Oxford University Press, 2008), p. 23.

introduced the concept of Westphalian sovereignty and provided states with authority and liberty to manage their affairs without external interference. In the contemporary era of globalisation, where the concept of sovereignty is losing its meaning (a transition from hard sovereignty to soft sovereignty), the threat to the security of a state has increased followed by a myriad complex problems which has led to the inevitability of privatisation of security.

Privatisation of security, which can be best defined as outsourcing of national defence to private contractors, is not a new concept. Though it dates back to centuries ago, it gained prominence in the contemporary globalisation era with the privatisation of violence (which is equally boosted by the expansion of transnational networks of extremist non-state actors) becoming a norm, and states, concurrently, becoming incapable of managing the mess emerging out of it. "The same global infrastructures which make it possible to organize production on a worldwide basis can also be exploited to lethal effect." If the state has benefited from globalisation, it has equally been weakened by it. "National security increasingly begins abroad, not at the border, since borders are as much carriers as barriers to transnational organized violence."[4] This cripples the state and restricts its growth, for internal and external security are intertwined. Managing such a complex security environment builds up pressure on the states. In the past also (post Cold War period), the global security condition began to deteriorate more due to the vacuum created by the demise of the Soviet Union. This was followed by the rise of non-state actors who, both implicitly and explicitly, challenged the world order, making it hollow from within by eating it up like termites. The series of events that occurred post Cold War period gave rise to "new security threats".[5]

New wars (intra-state wars), on the one hand, were becoming the norm, and, on the other, a transition could be seen from Cold War hyper militarisation to military downsizing across the world due to which a sudden surge was seen in the number of unemployed

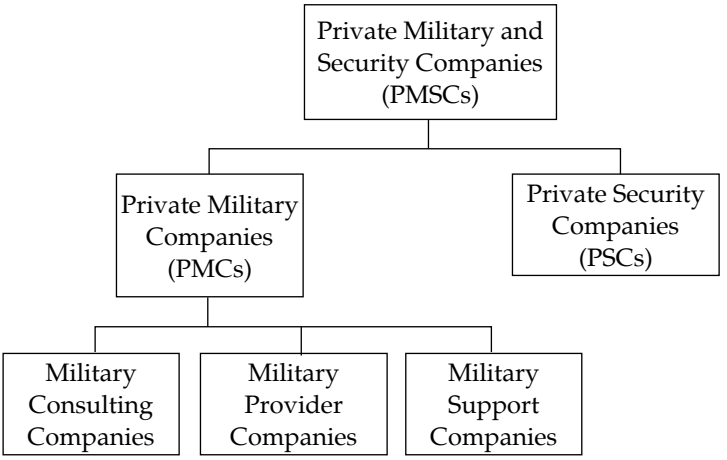
4. Ibid., p. 27.
5. P. W. Singer, "Corporate Warriors: The Rise of the Privatized Military Industry and Its Ramifications for International Security", *International Security*, vol. 26, no. 3, Winter, 2001-2002, pp. 186-220, p. 193.

defence personnel, as it rose to around 6 million in less than a decade. This factor really led to the popular emergence of the private military industry post the 1990s. Many 'out-of-job' personnel set up their own private military firms. The KGB **(***Komitet Gosudarstvennoy Bezopasnosti* or Committee for State Security) of the Soviet Union dissolved in 1991, and around 70 percent of its ex-personnel offered their services to these firms while acquiring top ranks.[6]

BASIC STRUCTURE OF PMSCs

Private Military Security Companies (PMSCs) consist of two broad sectors: Private Military Companies (PMCs) and Private Security Companies (PSCs). The main task of PSCs is "the provision of protection services for assets and/ or people. Their clients mainly include international organisations, multinational corporations, non-governmental organisations, small and medium-size enterprises, and individuals. The second category, PMCs, comprise the firms that participate in actions such as military operations, stabilisation and post-conflict reconstruction, and security sector reform." A better understanding of the typology of PMSCs can be gathered from given below.[7]

Fig 1: Typology of PMSCs in Terms of Services



6. Ibid., p. 194.
7. Nikolaos Tzifakis, "Contracting out to Private Military and Security Companies", Centre for European Studies, July 23, 2012 (research paper), p. 77, pp. 9-11.

The private security industry has always been in great demand due to which it has never seen a slowdown in business, not even during the international crisis of 2008. In 2007, the industry earned a net profit of $138.6 billion; while in 2009, it went up to $152.5 billion. It is anticipated that the growth in the private security industry is not going to halt in the coming years as well, and is expected to see a rise by 7.4 percent annually, reaching $218.4 billion in 2014.[8]

A GLIMPSE OF THE PAST

P. W. Singer in his book, *Corporate Warriors: The Rise of the Privatized Military Industry*, is of the opinion, "We have this idealised vision of war as being men in uniform fighting for the political cause of their nation-state. That is actually an anomaly. It describes only the last 300 years."[9] He further argues that the use of mercenaries had always been the norm ever since the advent of warfare. It is only after the emergence of modern nation-states under the Treaty of Westphalia that maintaining a 'standing army' became the new trend.[10] But this did not undermine the importance of mercenaries who were always believed to be efficient warriors, and cheaper than creating huge standing armies at state expense. This practice was primarily prevalent not only in the advanced European countries, but even the Asian colonies that were kept subjugated with the help of mercenaries. Also, Indian and other Asian princely states would deploy the mercenaries to guard the border areas and for other defence activities during the early and medieval period.[11]

PMSCs UNDER INTERNATIONAL HUMANITARIAN LAW (IHL)

Caroline Holmqvist, in her article "Private Security Companies: The Case for Regulation" throws light on the inadequate attention that has been given to PMSCs as compared to mercenaries under

8. Ibid.
9. Elke Krahmann, *States, Citizens and the Privatization of Security* (Cambridge: Cambridge University Press, 2010), p. 1.
10. James Dao, "The Nation; 'Outsourced' or 'Mercenary,' He's No Soldier", *New York Times*, April 25, 2004. Accessed at http://www.nytimes.com/2004/04/25/weekinreview/the-nation-outsourced-or-mercenary-he-s-no-soldier.html?src=pm on November 16, 2012 at 4:00 pm.
11. Shantanu Chakrabarti, "Privatization of Security in the Post- Cold War Period: An Overview of its Nature and Implications", *IDSA Monograph Series*, No.2, December 2009, pp. 75, p. 3.

legal provisions.[12] However, a very strong negative character assessment of the term 'mercenarism' has been done. Is there a place for mercenaries in our society, for they have borne states' condemnation ever since this trend came to light? Pejorative connotations of mercenaries such as 'Dogs of War' or 'Whores of War' in popular media articulate society's abhorrence towards them when compared with national soldiers.[13] This condemnation was further articulated when the mercenaries were denied the right to prisoner-of-war status under Article 47 of the Additional Protocol I of the Geneva Convention under International Humanitarian Law in 1977. The very same year, the Organisation of African Unity (OAU), a regional organisation, criminalised mercenarism in Africa under the OAU Convention for Elimination of Mercenarism in Africa**.** Amongst the other existing conventions, a noteworthy mention can be of the UN International Convention against the Recruitment, Use, Financing, and Training of Mercenaries which was concluded in 1989. However, the conventions lack a detailed explanation of the term 'mercenarism'.[14] "As a result of the lack of unanimity over the issue, the Private Security Companies (PSCs) continue to function without much effective international legal restrictions. At the international as well as national levels, most of the PSCs, thus, operate within a vacuum of effective legal regulation and accountability."[15]

MERCENARY V/S PRIVATE WARRIOR

What distinguishes a mercenary from a private warrior? It is generally recognised that "the traditional mercenaries were more or less ad hoc collections of former soldiers sometimes managing to form ephemeral organisations. On the other hand, the PMSCs have a distinct business nature with a permanent core staff and on-going marketing, and their operations emphasise private enterprise, efficiency, and expertise."[16]

12. Caroline Holmqvist, "Private Security Companies: The Case for Regulation", *SIPRI Policy Paper*, No. 9, January 2005, pp. 66, p. 44.
13. Deane-Peter Baker, *Just Warriors, Inc.: The Ethics of Privatized Force* (London: Continuum International Publishing Group, 2011), p. 31.
14. Hannah Tonkin, *State Control over Private Military and Security Companies in Armed Conflict* (Cambridge: Cambridge University Press, 2011), pp. 12-13, 174.
15. Chakrabarti, n. 11, p. 14.
16. Ibid., p. 6.

PMSCs have somehow managed to be considered as 'legitimate' as they claim to work "only for 'legitimate' clients such as states, Non-Governmental Organisations (NGOs) and registered corporations, and that they work alongside, and in cooperation with, national armed forces."[17]

Much of the literature that exists on the issue of private security is primarily on mercenaries, and little attention has been paid to the issue of inculcation of PMSCs (which happens to be a new concept) which gets concluded in a few pages. The main problem which has arisen due to this is the blurred understanding of the latter which leads to immense confusion between the two concepts.

'WAR ON TERROR' IN PRIVATE HANDS

The United States of America's hyper-militarised war on terror was largely supported by the private military and security firms, which would otherwise have been wholly fought by uniformed soldiers. The conflicts in Afghanistan (2001) and Iraq (2003) helped create the modern private security industry. It was post US engagement in both the wars that the world witnessed the rise of the private security firms willing to provide their services in high-risk environments. Though the Obama Administration has begun to disengage from both the conflicts now, the growth of the private security industry has not come to a standstill; rather, it is constantly expanding.

Iraq

The extensive involvement of private security personnel in Iraq made it known as the "first privatised war."[18] The number of private military contractors deployed during the 2003 invasion was ten times bigger than in the 1991 Gulf War. This time, the ratio between private military contractors and the US soldiers was one contractor for every 10 US soldiers, while earlier it had been 1:100.[19] In 2009 (two years before the troops' withdrawal), when the talks on troops' withdrawal

17. Tonkin, n. 16, p. 18.
18. Joakim Berndtsson, "The Privatization of Security and State Control of Force: Changes: Challenges and the Case of Iraq", Doctoral dissertation in Peace and Development Research, School of Global Studies, University of Gothenburg, p. 3.
19. P. W. Singer on "The Iraq War was the "First Privatized War"', interviewed by Terry Gross, Centre for Research on GLobalisation. Accessed at http://globalresearch.ca/articles/SIN307A.html on November 20, 2012 at 10:47 pm.

from Iraq were already doing the rounds, an estimated 20,000 -48,000 private security personnel were present in the country.[20]

Well established Private Military Forces (PMFs) such as Vinnell, MPRI (Military Professional Resources Inc.) and Halliburton's Kellogg Brown and Root (KBR) are amongst more than a dozen Pentagon hired PMFs that have served in Iraq to support US activities during Operation Iraqi Freedom. "During the Iraq war, PMFs also provided operational support for the B-2 stealth bomber, the F-117 stealth fighter, Global Hawk unmanned aerial vehicle, U-2 reconnaissance aircraft, the M-1 tank, the Apache helicopter, and many navy ships."[21]

Afghanistan

In Afghanistan, "even dying is being outsourced."[22] Private security companies have controlled even the minute activities that take place inside the country ever since the war (Operation Enduring Freedom) began. MPRI and DynCorp are amongst the well known PMCs in Afghanistan. In January 2012, Defence Department statistics reported the presence of 113,491 employees of defence contractors as compared to 90,000 American soldiers in Afghanistan. "Of those, 25,287, or about 22 percent of the employees, were American citizens, with 47 percent Afghans and 31 percent from other countries."[23]

The figures articulate the strong hold of Afghans on the private security industry in Afghanistan. Many of them (Afghan nationals) happen to be the former Afghan commanders who fought against the Soviets during the Soviet Union's invasion of Afghanistan in 1980s, and were also actively involved in civil wars which took place post Soviet withdrawal.[24] Even the warlords who are associated with private security companies that are licensed by the Afghan Ministry of Interior, constantly strive against the

20. Berndtsson, n. 20., p. 3.
21. Deborah D. Avant, "The Privatization of Security: Lessons from Iraq", pp. 1-15, p. 3. Accessed at http://www.socsci.uci.edu/~davant/pub/20_avant_orbis.pdf on November 20, 2012 at 9:57 pm.
22. Rod Norland, "Risks of Afghan War Shift From Soldiers to Contractors", *The New York Times*, February 11, 2012.
23. Ibid.
24. Matthieu Aikins, "Afghanistan's Fiscal Cliff", *Foreign Policy Magazine*, October 17, 2012. Accessed at http://www.foreignpolicy.com/articles/2012/10/17/afghanistan_s_fiscal_cliff on November 20, 2012 at 1:49 am.

government for more power and authority, and their interests clearly clash with the US government's interest of setting up a stable Afghan government.[25]

A recent development that has taken place in the private security sector in Afghanistan is its gradual replacement with the Afghan Public Protection Force (APPF), a state-run security force, which is considered to be comparatively less efficient. The Afghan government's decision to hand over the security sector to APPF might further deteriorate the security condition in the country primarily for the US funded development and reconstruction projects. This shall further enhance the security cost. In June 2012, SIGAR (the Special Inspector General for Afghanistan Reconstruction) was reported as saying, "Security costs for more than a dozen major development projects could increase by over $55 million over one year as contractors switch to the Afghan Public Protection Force, a state-owned security force that is replacing private firms."[26]

India's Contribution

India might not own any private military and security companies of its own at the international level, but Indian nationals have been providing their services to the Western private security industry operating in conflict zones and high risk environments. For instance, in Iraq around 1,500 Indian nationals were recorded to be working with the PSCs in the initial years of war, despite the Indian government banning the recruitment of Indian nationals (in 2004) considering the worsening security conditions there.[27] The ban was lifted in 2010.[28] As far as Afghanistan is concerned, Indian workers have been engaged there primarily in the reconstruction projects. The construction of the Zaranj-Delaram highway in southwestern Afghanistan by the Indian Army's Border Roads Organisation in

25. John F. Tierney, Report submitted by US House of Representatives, "Warlord, Inc.: Extortion and Corruption Along the U.S. Supply Chain in Afghanistan", June 2010, pp. 79, p. 2.
26. Nathan Hodge, "Afghan Phaseout of Security Firms Draws Concern", *The Wall Street Journal*, June 29, 2012.
27. Chakrabarti, n. 13, pp. 60-61.
28. See "Ban on Recruitment of Indians for Iraq Lifted", *Iraq Business News*, dated on May 17, 2010. Accessed at http://www.iraq-businessnews.com/2010/05/17/ban-on-recruitment-of-indians-for-iraq-lifted/ on November 21, 2012 at 5:00 pm.

2009 is one of the biggest reconstruction projects carried out by India so far.[29] India has invested in rebuilding the war-torn country by shelling out significant amount of development aid. "Today, India is the fifth-largest donor in Afghanistan, having pledged US$2 billion for wide-ranging infrastructure development and capacity-building initiatives."[30]

CONCLUSION

The deployment of private contractors on the battlefield is no longer an optional or marginal activity,[31] but this certainly does not bind the states from regulating the wrongdoings (mainly human rights violations) carried out by the former, for states have jurisdiction over crimes committed by individuals in their territory, regardless of their (individuals') nationality. Though the hiring state, the host state and the home state of a PMSC[32] share the joint responsibility to regulate it in a conflict zone, the United Nations can play a significant role (along with the United States of America, for most of the PMSCs operational in the world, primarily in the conflict zones, are American) in setting up an international regulatory body covering the tasks undertaken by them.[33] Thus, states will also be under constant scrutiny and legal obligation to publicly and objectively report the accurate number of casualties of hired private personnel. For instance, private security personnel are being regulated by ISOA (International Stability Operations Association), a non-profit trade association set up by Doug Brooks in 2001 to support the private military and security industry. Its code of conduct guides the member states on how effectively and ethically private personnel may be utilised in conflict zones.[34]

29. See "Security Being Beefed up for BRO in Afghanistan", *The Financial Express,* dated on November 25, 2005. Accessed at http://www.financialexpress.com/news/security-being-beefed-up-for-bro-in-afghanistan/158554 on November 22, 2012 at 2:45 pm.
30. Shanthie Mariet D'Souza, "Can India Stay the Course in Afghanistan?", *Asia Times Online*. Accessed at http://www.atimes.com/atimes/South_Asia/NK30Df02.html on November 30, 2012 at 2:36 am.
31. Mark Cancian, "Contractors: The New Element of Military Force Structure", *Parameters*, Autumn, 2008, p. 61.
32. Tonkin, n. 16, p. 3.
33. Philipp Schweers, "The Privatized Military Industry: Legal Black Hole or lucky chance?", *DIAS- Analysis*, No. 38, January 2009, pp. 1-8, p. 7.
34. See http://www.stability-operations.org/index.php for more information on ISOA.

"In sum, the rise of the privatized military industry raises possibilities and dilemmas that are not only compelling and fascinating in an academic sense, but are also driven by real-world relevance. It is, thus, paramount that our understanding of this new player in international security continues to be developed."[35]

35. Singer, n. 17, pp. 219-220.

PAKISTAN'S UNREMITTING SEARCH FOR STRATEGIC DEPTH IN AFGHANISTAN

SHALINI CHAWLA

As 2014, the deadline for the US and North Atlantic Treaty Organisation (NATO) troops withdrawal approaches, the anxiety regarding the future of Afghanistan will grow and, most importantly, the future role of Pakistan in Afghanistan will become extremely critical. The apprehensions regarding the role of Pakistan are obviously intensified given Pakistan's volatile domestic situation, growing extremism within Pakistan and its strained relationship with the United States. Although the shape of Afghanistan post US withdrawal would be determined by multiple factors, especially, the role of other regional powers—India, Russia and China—which have significant stakes in the stability of Afghanistan, Pakistan's role in the country would certainly impact it the maximum.

Undoubtedly, Pakistan has been overly obsessed with the desire to gain strategic depth in Afghanistan. The all powerful military and the intelligence agency, the Inter-Services Intelligence (ISI), which authored and executed the policy of strategic depth since the late 1980s through the 1990s when they strongly backed the Taliban, till today strongly believe in having strong control

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over Afghanistan. At no stage was the policy of "strategic depth" logical or viable for Pakistan and its adoption of this doctrine and, thus, control over Afghanistan is considered a strategic blunder which has actually facilitated Pakistan's drift into extremism and not allowed it the option of altering its strategic calculus. In Pakistan's perception, the strategic depth policy has allowed it to maintain a conventional balance against India, but, on the other hand, this policy has made the tribal areas of Pakistan the hub of terrorism, and militancy and extremism are perhaps at their peak at present, resulting in the loss of Pakistan's sovereignty. For the first time in the history of Pakistan, not only did the military General Headquarters (GHQ) suffer a terrorist attack in 2009 but by now, the establishments of all the three forces, the army, navy and air force have been attacked.

DEFINING STRATEGIC DEPTH

The concept of strategic depth has been interpreted differently by different policy-makers and scholars, but broadly two approaches can be classified.

First, and a more traditional approach to the concept of strategic depth is, as it is understood in the pure military literature. Strategic depth, according to this interpretation, is the distance between the battle sectors and the combatants' capital cities, industrial areas, defence production units and other units of strategic importance. The military planners need to calculate the vulnerability of these assets in case of a military offensive. The creation of strategic depth would allow the country's forces to move back deeper into their own territory, absorb the offensive thrust of the enemy short of his military objectives and also, apply force on the vulnerabilities of the attacking military.[1]

When interpreted in purely military terms, strategic depth can have three-fold offshoots. The first is when the combatant seeks strategic depth in his own territory; the second, when a state seeks strategic depth in the neighbouring country, extending its control in the foreign territory and the state is, thus, able to trade territory for a

1. Air Cmde Jasjit Singh, "Strategic Search-Strategic Depth and the Question of the IAF's Strategic Posture", *AIR POWER Journal*, vol 2, no. 2, Summer 2007, pp. 11-26.

better partner; and, the third, when the state decides to create buffer states at its borders.

But strategic depth is not merely geographical and could have multiple dimensions: political, social or for that matter, even ideological (as in the case of Pakistan). The concept of strategic depth has been used in the past, by Russia, Germany and Poland, and even Mao's "People's War" was a part of the concept of strategic depth. Mao's People's War relied on strategic depth within China's own territory.

Russia used its vast space in its war against Napoleon and during World War II when Hitler invaded it. During the Cold War era, the Central Asian Republics provided Russia strategic depth. When Hitler invaded Russia, in addition to *lebensraum*, he was looking for strategic depth.

In the case of China, Mao's People's War was an all out war fought by land forces, supported by a motivated population. The strategy was characterised by drawing the enemy deep into own territory and ultimately destroying him by attrition of resources by guerrilla forces and aerial offensive. According to Air Cmde Jasjit Singh :

> Mao's "People's War" doctrine was premised on this philosophy, exploiting the strategic depth that China's geographical spread provided, to allow the attacker's offensive to peter out, with its logistic lines extensively stretched and vulnerable; followed by a concerted offensive by the defender against an over-extended enemy and defeating it with a combination of guerrilla and conventional war.[2]

The second approach to strategic depth is ideological and religious where the state tries to extend its control and influence by spreading ideology or religious interpretation. In this context, China's efforts of spreading its Communist-Socialist ideology (through revolutions and war) for extending its control can be well understood. China went in for the ideological control in the first 20 years of formation of the

2. Air Cmde Jasjit Singh, "Pakistan and its Search for Strategic Depth: Prospects for Af-Pak Region in Post War Period," paper presented at a CAPS–Manipal University National Seminar at Manipal University, on "Pakistan's Future: Implications for the Region", November 14-15, 2011.

People's Republic of China (PRC), before Mao got embroiled in his own "Cultural Revolution". China's revolutionary war and also its policies in Tibet can be exemplified as an extension of ideological control.

PAKISTAN'S DESIRE FOR STRATEGIC DEPTH

In the case of Pakistan, one must remember that the classical model of strategic depth in relation to India simply cannot work because all its key cities and industry are within 70-odd km from the Indian border. Hence, any withdrawal westward would leave the soul of Pakistan in India's hands. What we need, therefore, is to understand the contours of Pakistan's concept and motivation for "strategic depth". Essentially, it has adopted a mix of both the military and ideological approaches in order to gain strategic depth in Afghanistan. If one has to trace the events and the evolution of Pakistan's policies and actions in order to gain strategic depth, both approaches can be seen as parallel for Pakistan. Pakistan has been overly concerned about having a hostile government in Afghanistan and over the decades has interfered in that country's domestic politics. It has perpetually sought a 'friendly government' in Kabul. But ironically, the relations between Afghanistan and Pakistan are scarred by turbulence and mistrust.

Pakistan's vision of strategic depth surfaced in the late 1980s with Gen Aslam Beg's announcement of the doctrine; and the Pakistani *elites* began talking about strategic depth and also explored opportunities to replace the Afghan government led by Najibullah. For decades, Pakistan has bewailed the lack of strategic depth and, hence, the need to create it in the neighbouring Afghanistan. Pakistan has always suffered a deep sense of insecurity, partially owing to its geographical limitations and, to a great extent, due to the fact that it was always apprehensive about India's policies which it perceived as 'hegemonic'. From the beginning, the Pakistan military and *elites* were concerned about the security of their major cities like Lahore, and also communication lines, in case of a confrontation with a much larger, conventionally stronger, India. One can presume that the desire for strategic depth would have started to be nurtured after Pakistan's defeat in the 1971 War, where it lost a significant portion of its military assets also. It was after 1971 that Zulfiqar Ali Bhutto propagated the concept that Pakistan is not just a South Asian state but

also a West Asian one. The army under Gen Zia-ul-Haq (since 1976) projected itself as the defender of not only the territorial boundaries of the state but also its "ideological boundaries". Strategic depth in this respect was interpreted to include the Muslim nations in order to gain support on varied fronts (including funding for Pakistan's nuclear programme which commenced in 1971).

On the classical military aspect of strategic depth, one would believe that since Pakistan presents a comparatively narrow width, it probably needed the expansion westwards and also eastwards (in Kashmir). Also, Gen Sunderji's doctrine of "deep strike" in the 1980s would have provided justification to the Pakistani thinking on the criticality of gaining strategic depth.

On one side, in the 1980s, one could see the merger of both approaches for strategic depth and, on the other, the Soviet influence, later followed by its occupation of Afghanistan, created conducive ground for Pakistan to intervene in Afghanistan. Pakistan's engagement in the Afghan War had varied implications which actually impacted the balance of power in the country. In the 1980s, the ISI emerged as one of the most important decisive factors in Pakistan's power politics. Although, the organisation had expanded during Ayub's time, the ISI gained much more strength under Gen Zia, as it was entrusted with the responsibility of recruiting and training the Mujahideen and also running the covert war against the Soviets in the 1980s.

The ISI became a state within a state, answerable to no one, neither the Prime Minister, nor the President. It has been an extension of the army, and fully supported the Rabbani government in the early 1990s in Afghanistan.The Afghan War provided a legitimate infrastructure to Pakistan for preparing *jihadis* and using them for covert war. As Pakistan was anyway following the covert war strategy with India, the Afghan War reinforced the existing strategy which intensified much more in the coming decades. The democratic regime in Pakistan was further weakened with this extended military takeover and the ISI gaining strength.

Pakistan's border regions, the Federally Administered Tribal Areas (FATA) and Northwest Frontier Province (NWFP) (now known as Khyber Pakhtunkhwa (KPK) became the staging posts for the *jihad*

because of their proximity to the eastern and southeastern Afghan provinces of Paktika, Paktia, Nangarhar, Kunar, Zabul and Kandahar.

Pakistan was also now able to realise its long-cherished dream of securing *strategic depth* in Afghanistan. With its involvement in the Afghan War, the ISI was able to gather enough expertise in waging guerrilla warfare and also obtain sufficient equipment to accelerate and intensify the war in Kashmir and other parts of India. In order to continue this process, Pakistan needed a favourable government in Kabul and, thus, the preference of Islamabad for the Taliban regime, with a radical ideology. Pakistani policies in the late 1980s and 1990s amounted to rendering Afghanistan a satellite state, with a clear strategy of, firstly, denying India any political or economic influence in Kabul and, secondly, facilitating a favourable government in Kabul which would not allow the Pashtun (also known as Pakhtun) nationalism simmering on the frontier borders of Pakistan to secede.[3]

At no stage was strategic depth really viable for Pakistan. Looking at the classical (military) interpretation of strategic depth, Pakistan's case regarding Afghanistan is irrelevant. Strategic depth in the classical sense, historically, can be used if there is a substantive territory which the country is willing to give up or the country might occupy. In the case of Pakistan, in the event of an Indian invasion, the major Pakistani cities would be lost and Pakistan would cease to exist. So what strategic depth are the Pakistanis talking about ?

By using the term strategic depth, Pakistan seeks rationalisation of its control and influence in Afghanistan for a number of reasons which can be listed as follows:

- One of the most important factors in determining Pakistan's policies in Afghanistan is the lingering Afghanistan-Pakistan border issue based on the Durand Line, which separates the tribal areas of NWFP from Afghanistan. No Afghan regime, including the Rabbani government, has ever accepted the legitimacy of the border drawn by the British in 1893 – the so-called Durand Line.[4] The Durand Line Agreement was to last for 100 years and

3. Shehzad H. Qazi, "Pakistan's Afghanistan Plan: Strategic Depth 2.0", November 3, 2011.
4. The British accepted the traditional boundary roughly established by Ranjit Singh along what came to be known as the Durand Line based on the agreement between Emir Abdul Rehman, the ruler of Afghanistan and Sir Henry Mortimer Durand, British Foreign Minister in 1893. This left a majority of the Pashtun population with British India.

expired in 1993. It was very clear that the Afghan regime would not recognise the agreement and would seek to incorporate the Pashtun areas east of the Durand Line, into Afghanistan.

- Pakistan has faced the issue of Pashtun nationalism which demanded a separate Pashtunistan from the 1940s. There have been concomitant calls for independent Pashtun homelands in FATA, KPK and parts of Balochistan. Pakistan certainly wanted to prevent the creation of Pashtunistan and, thus, further disintegration of Pakistan. Control and influence over Afghanistan by a Pashtuns dominated (essentially Taliban) government would, therefore, reduce the demand for Pashtunistan and yet have the Pashtuns under Pakistan's control.
- During the 1965 War, Pakistan managed to move its aircraft to the Iranian airfields of Zahedan across the Balochistan border. Pakistan was not certain that this facility would be available in the future. Hence, its military objective was to use the Afghan territory and air bases as a sanctuary. The Afghan territory would also provide the military with a much larger space for combat training without the risk of being monitored by the radars on the Indian side.
- Afghanistan provided Pakistan a safe haven to train the Islamist militant groups such as the Harakat-ul-Mujahideen (HuM) and Jaish-e-Muhammed (JeM) and the Lashkar-e-Tayyeba (LeT), which were to conduct terrorist activities in Jammu and Kashmir and, eventually in other parts of India, including Punjab.
- Undermining Indian influence in Afghanistan has always been a priority for Pakistan. According to a former French diplomat, Fre'de'ric Grare, "According to Pakistan, whatever India does in Afghanistan is a ploy against Pakistan, be it economic investment, infrastructure, or any related matter....As a result, Pakistan has ensured that Indian interest would be blocked whenever and wherever possible".[5]

  Islamabad has always viewed India's actions in Afghanistan as a policy of encirclement and, thus, in its view, a radical Islamist regime – the Taliban – would help to cut down India's role in the region.

5. Fre'de'ric Grare, "Pakistan", in Ashley Tellis and Aroop Mukharji, eds., *Is a Regional Strategy Viable in Afghanistan* (Washington, D.C.,: Carnegie Endowment for International Peace, 2010), p. 21.

- Pakistan's control over Afghanistan gives it access to the Central Asian Republics. Pakistan is undoubtedly keen to expand its options for energy transportation due to the increasing demand for energy within Pakistan
- Lastly, and very importantly, by using the normally not well understood term "strategic depth", which sounds impressive, the Pakistani leadership hopes to influence the public opinion to support its polices.

SUCCESS OF STRATEGIC DEPTH ?

How successful Pakistan's policy of creating strategic depth in Afghanistan has been is obviously a matter of discussion, although the general consensus is that Pakistan's Afghanistan policy has been, by and large, unsuccessful. Pakistan supported the Taliban regime in the 1990s for strategic objectives but did not get the desired results. The Pakistani leadership miscalculated that the Taliban regime in Afghanistan would lead to recognition of the Durand Line and also, that Pashtun nationalism would be much more under control. But, obviously, none of the Pakistani assumptions came true: the Durand Line issue remained and Pashtun nationalism was, in fact, further nurtured by the Taliban.

Pakistan's strategies in Afghanistan have proved ineffective and not only has Pakistan failed to sustain its strategic depth but has become very unpopular in that country. There has been an increasing number of border skirmishes between Pakistan and the Afghanistan security forces. The Pakistani leadership has tried hard to establish control over Afghanistan but the reverse has happened. Karzai continues to be dissatisfied with the military's and ISI's interference in the functioning of Afghanistan. The military's continued support to the Haqqani network which has encouraged instability in Afghanistan, has been an irritant for Karzai.

Pakistan's policies in Afghanistan have not gone down well with the US and, presently, the two nations are in the worst phase of their relationship. The US-Pakistan tensions reached a peak after the killing of Osama bin Laden in May 2011. Pakistan's reluctance to act against the targeted terror groups clearly projected its partial and selective approach in the counter-insurgency operations. Dissatisfaction in

Washington has led to a shift in the US posture. The US has announced the suspension of further aid to Islamabad, which would have security and economic implications for Pakistan. It would delay the US equipment and training coming into Pakistan and would impact Pakistan's ability to negotiate in the international financial institutions like the International Monetary Fund (IMF) and the World Bank.

Pakistan has failed to exclude India from Afghanistan: India has played an active role in rebuilding Afghanistan and India-Afghanistan ties have significantly improved. India signed a Strategic Partnership Agreement with Afghanistan in October 2011 and has pledged to invest upto $2 billion in the development of the country. India has been actively involved in Afghanistan and gets good support from the Karzai government and also the Afghan nationals.

Pakistan's policy of support to terrorism has backfired and it is currently facing a broad landscape of militancy. A vast variety of terrorist groups operate from Pakistan and share a varied relationship with the state. Some of these the military is willing to target, some it was compelled to target, and, a few it wants to protect. The impact of the Afghan War has allowed the Al-Qaeda, Haqqani network and Taliban inside Pakistan where they have been trying to expand their influence. Insurgency in KPK, NWFP and Balochistan is at its peak and various terrorist groups have their bases in these areas. Added to this deadly mix is the Tehrik-e-Taliban Pakistan (TTP) which has adopted a strictly anti-state posture, demanding the exit of foreign troops from Pakistan.

SHIFT IN THE POLICY OF STRATEGIC DEPTH?

Lately, Pakistan has projected a shift in its Afghan policy since very clearly its doctrine of gaining strategic depth in Afghanistan is being held responsible for the continued instability and raging insurgency in Afghanistan. Gen Kayani has stated that Pakistan did not want "strategic depth" in Afghanistan as is generally perceived in pure military-strategic terms and the army's position is that Pakistan wants a "peaceful, friendly and stable" Afghanistan. He added that strategic depth is not about "controlling Afghanistan" but ensuring that Pakistan does not have long-term security problems on its western borders. [6]

6. "Kayani Speaks", *Dawn,* at http://archives.dawn.com/archives/29601

Today's geo-political environment is very different from that of the 1990s and, thus, some shift in Pakistan's stated policy in Afghanistan is not surprising. In the 1980s and 1990s, when Pakistan intervened in Afghanistan, there were few actors with a vested interest in Afghanistan, but today, there are probably more than 30 nations with a vested strategic interest in the stability of Afghanistan. Thus, the projection of Pakistan's strategic depth and its role in Afghanistan needs some modification.

Certain conclusions can be drawn based on a study of Pakistan's desire to obtain strategic depth in Afghanistan :

- Pakistan's obsession with gaining strategic depth in Afghanistan is unlikely to change as the objectives which existed behind the rationale still exist. For example : the Durand Line factor is still lingering, the Pashtun nationalism in Pakistan is no less, and FATA and KPK, troublesome regions even in the most peaceful times in Pakistan, are engaged in full-blooded insurgency, while India's image in Afghanistan has gone up and its role has further expanded into development in the country.
- Pakistan has talked about change in its Afghan policies but there are contradictions in its position and it is still not clear which route it wants to adopt.
- Strategic depth will remain an integral part of Pakistan's military strategy and now, strategic depth means a pro-Pakistan government in Afghanistan which allows the former to exercise influence over Afghanistan.

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