



AIR POWER

Journal of Air Power and Space Studies

Vol. 8 No. 1, Spring 2013 (January-March)



AIR POWER

CENTRE FOR AIR POWER STUDIES

New Delhi

AIR POWER is published quarterly by the Forum for National Security Studies for the Centre for Air Power Studies, New Delhi.

Board of Trustees

Shri **M.K. Rasgotra**, former Foreign Secretary and former High Commissioner to the UK **Chairman**
Air Chief Marshal **O.P. Mehra**, PVSM, former Chief of the Air Staff and former Governor Maharashtra and Rajasthan

Air Chief Marshal **S.P. Tyagi**, PVSM AVSM VM, former Chief of the Air Staff
Secretary Defence (Finance) Ministry of Defence 139 South Block New Delhi. (Ex Officio)

Dr. **Sanjaya Baru**, former Media Advisor to the Prime Minister

Captain **Ajay Singh**, Vice President, Jet Lite Airways, FID, DGCA, former Deputy Director Air Defence, Air HQ
Air Commodore **Jasjit Singh**, former Director IDSA **Managing Trustee**

AIR POWER Journal welcomes research articles on defence, military affairs and strategy (especially air power and space issues) of contemporary and historical interest. Articles in the Journal reflect the views and conclusions of the authors and not necessarily the opinions or policy of the Centre or any other institution.

Editor-in-Chief
Consulting Editor
Distributor

Air Commodore Jasjit Singh AVSM VrC VM (Retd)
Lt Col R Ghose, SM (Retd)
KW Publishers Pvt. Ltd.

All correspondence may be addressed to

Consulting Editor
AIR POWER

Arjan Path, Subroto Park, New Delhi 110 010

Telephone: (91.11) 25699131-32 Fax: (91.11) 25682533 e-mail: diroffice@aerospaceindia.org

website: www.aerospaceindia.org

© Forum for National Security Studies

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording or by any information storage and retrieval system without written permission from the Managing Trustee, Forum for National Security Studies, New Delhi

ISBN: 81-87966-30-0

AIR POWER Journal is published four times a year and is distributed by

KW Publishers Pvt. Ltd.

4676/21, First Floor, Ansari Road, Daryaganj, New Delhi 110 002

Telefax: 23263498 e-mail: knowledgeworld@vsnl.net

Printed and Published by Air Cmde Jasjit Singh (Retd) on behalf of the Forum for National Security Studies (the Trust running the Centre for Air Power Studies, New Delhi) and Printed by Rajkamal Electric Press, Plot No. 2, Phase IV, HSIIDC, Kundli 131028, Sonapat, Haryana and Published at P-284, Arjan Path, Subroto Park, New Delhi 110 010. Editor: Air Commodore Jasjit Singh (Retd).

RNI REGN No. DELENG/2006/18450

CONTENTS

Vol. 8 No. 1, Spring 2013 (January-March)

Editor's Note	V
1. DEBATING INDIA'S DEFENCE EXPENDITURE: PROBLEMS AND PROSPECTS	1
<i>Bhartendu Kumar Singh</i>	
2. NUCLEAR DISARMAMENT AND NON PROLIFERATION: THE STEPS TO GLOBAL ZERO	19
<i>Stuti Banerjee</i>	
3. GRAND STRATEGIC APPROACH: A PERSPECTIVE	33
<i>Prateek Kapil</i>	
4. DRAGON'S INFORMATION WARFARE: IMPLICATIONS FOR INDIA	53
<i>Raj Mongia</i>	
5. GEOSTRATEGIC IMPLICATIONS OF ENVIRONMENTAL CHANGE FOR ISLAND NATIONS: A CASE STUDY OF INDO-MALDIVIAN EQUATIONS	71
<i>Dhanasree Jayaram</i>	
6. ADDRESSING NUCLEAR TERRORISM: AN INTERDISCIPLINARY APPROACH	95
<i>Yeon Jung Ji</i>	

CONTENTS

7. CLOSURE OF THE STRAIT OF HORMUZ: POSSIBILITIES AND CHALLENGES FOR INDIA	117
<i>Rhea Abraham</i>	
8. BHUTAN AND CHINA RELATIONS: IT'S IMPACT ON INDIA	137
<i>Indrani Talukdar</i>	
9. SOUTH CHINA SEA IMBROGLIO: AN INDIAN PERSPECTIVE	149
<i>Sana Hashmi</i>	
10. AIRSHIP: A VIABLE AIRLIFT OPTION	167
<i>Ashok K Chordia</i>	
Index	182



EDITOR'S NOTE

Few economists in India have been attracted to defence studies even though a large quantum of resources are directed towards the defence of the country. The fact that stares every time there is a review of the defence budget is that the costs of military systems are ever on the increase. Since there always cannot be a substantial enhancement in the total outlay, there should always be a consideration on rational allocation while formulating the budget. We may well have to introduce enhancement of accountability factors combined with substantial delegation of powers. Strategists may have to lend deeper thoughts to the concepts of Budget Centres and Programme Budgeting with the overall vision towards capability building.

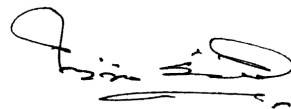
It may be a common rhetorical statement oft heard in strategic discussions that India's grand strategy has not been articulated enough. It can be argued that the grand strategy has not been compiled in one single document and the Arthasastra may not have the interpretive clarity for the community in general. However, the writings of India's first Prime Minister Pandit Jawaharlal Nehru and several others to follow have compelling influences on international affairs and foreign policy of this country. India's historical experiences have been closely associated with her strategic culture. Mahatma Gandhi's practice of non-violence and Chanakya's interpretation of realism in state relations have reasonable reflections in our nuclear strategy.

Among several challenges facing the international community, an important issue relates to nuclear programmes and policies. The global security architecture unquestionably brings up issues of nuclear proliferation

and concomitantly debates on nuclear disarmament and possible steps towards global zero. Safety of fissile material that is weapon usable and tactical nuclear weapons draws in dangers associated with nuclear terrorism and, therefore, arguably matters of serious concern.

There would be related challenges surrounding energy security which has enormous implications for an energy deficient country. Energy security issues also brings about several other challenges related to geo-strategic locations of nations, their relations with India and trade routes including sea lines of communication. National interests also demand a cooperative approach towards peace in the region. Even with an apprehensive view towards China's aggressive stance in Southeast Asia, India's posture with respect to the South China Sea becomes critical given the growing dynamics of China's relation with ASEAN countries in terms of an expanding vector towards trade and commerce. It will also be important to keep a vigilant note of changing positions of island countries as they are affected by environmental changes and the entwined dimensions of national security.

It has been heartening to note the contributions of scholars and scholar-warriors, and I will look forward to their continued enthusiasm in the field of strategic studies.

A handwritten signature in black ink, appearing to be 'Rishi Singh', with a horizontal line underneath.

DEBATING INDIA'S DEFENCE EXPENDITURE: PROBLEMS AND PROSPECTS

BHARTENDU KUMAR SINGH

India's debate over defence expenditure is unending and is rather going in the wrong direction. Every year, when the Union Finance Minister reads his budget speech, the debate over defence expenditure resurfaces. As usual, there are always two sides to the debate. While many experts are critical of the low level hikes in defence budget, others make a Leviathan of it. The year 2012 was no different. The (then) Finance Minister's announcement of budgetary hikes for defence over the last year's figure was interpreted on expected lines. In analysing the defence budget allocations, both sides in the debate duck the important issues associated with India's defence expenditure and are quite content with a superficial analyses of budgetary figures. The narrow contours of the debate over India's defence expenditure are not without consequences. *First*, it pushes the entire correlation between defence and development under the carpet. *Second*, the debate is often coloured with a fair degree of emotionalism. *Third*, crucial questions that could have helped attain 'value for money' are being overlooked.

This paper will, therefore, discuss some of the issues that do not get adequate

Dr. **Bhartendu Kumar Singh** is in Indian Defence Accounts Service (IDAS) and presently posted as Dy Controller of Defence Accounts (Air Force), Subroto Park, New Delhi. Views expressed here are his personal and do not reflect the opinion of the Government or the Centre for Air Power Studies.

Development economists in India by and large remain shy from interfering in budgetary debates

space in the off-and-on debate on India's defence expenditure. The paper is built upon the hypothesis that unless the Indian debate on defence expenditure is expanded to include the new issues, management of India's defence expenditure will remain a futile exercise and would not serve the national security objectives.

INDIA'S RECURRING DEBATE ON DEFENCE EXPENDITURE

The Indian debate on defence expenditure has some unique attributes. *First*, it is still under-developed. Available literature on defence budget has largely ignored the 'defence – development debate.'¹ There are very few writings that correlate the defence-development linkage in the Indian context without coming to a uniform conclusion.² *Second*, the debate surfaces only during the budget time, perhaps to influence the budget or criticise it post-facto. The surfeit of articles in February and March is followed by a total lack of interest for rest of the year, despite the fact that budget management (in defence as well as other sectors) is a round-the-year exercise. *Third*, the participation is largely one sided, coming mainly from the defence experts. Development economists in India by and large remain shy from interfering in budgetary debates. As a result, vital issues such as management of defence expenditure, the impact of higher defence allocations on social sector, and above all, the utility of defence budget in pushing up the defence modernisation are never discussed.

A glance at the defence budget for the year 2012-13 would testify this.

-
1. See, Jasjit Singh, *India's Defence Spending: Assessing Future Needs* (New Delhi: Knowledge World, 2001); Amiya Kumar Ghosh, *India's Defence Budget and Expenditure Management in a Wider Context* (New Delhi: Knowledge World, 1996); Amiya Kumar Ghosh, *Defence Budgeting and Planning in India: the Way Forward* (New Delhi: Knowledge World, 2006).
 2. Jean Dreze and Amartya Sen, *India: Development and Participation* (New Delhi: Oxford University Press, 2002); Na Hou, *Arms Race, Military Expenditure and Economic Growth in India*, Unpublished PhD thesis, submitted to Department of Economics, Business School, University of Birmingham (October 2009); Aviral Kumar Tiwari and A P Tiwari, 'Defence expenditure and economic growth: evidence from India', *Journal of Cambridge Studies* (Cambridge: September 2010), Vol. 5, No. 2-3, pp. 117-131.

The current budgetary outlay is for Rs. 1, 93,408 crore (\$ 39 billion) which is 13.15% more than last year's revised figures of Rs 1, 70,937 crore. The revenue share has been pegged at Rs. 1.13,829 crore and the capital budget stands at Rs. 79,579 crore. The current budget constitutes 1.9% of the GDP and 13.15% of the Central Government expenditure. The Ministry of Defence (MoD) seemed to be 'satisfied' with the defence budget as was evident from its responses. While the Defence Minister A K Antony did announce in the Parliament that he would seek hike in the proposed budgetary allocations citing twin threats from China and Pakistan and the new modernisation plans of the services³, his ministry (subsequently) decided against it in the wake of slow economic growth⁴. However, very few write ups appeared in the post-budget debates that did not speak 'against' the budgetary allocations.

The 'excessive' assessment came from neighbouring countries like Pakistan. *The Dawn*, a leading Pakistan newspaper, sounded alarmed when it flashed India's military hike as 'an attempt to counter China's military build-up and traditional rival Pakistan's'.⁵ According to an editorial in a Pakistan newspaper, India's announcement of 17% raise in its defence expenditure was indeed a 'substantial raise'. The paper concluded that India's huge military preparations are meant to contain China and intimidate Pakistan, besides extending sphere of influence to the Middle East, Central Asia and beyond⁶. Surprisingly, the reactions from the Chinese media was less vocal than it had been in past.⁷

On the other side of the spectrum, many find the defence budget as too modest or inadequate. Ajay Shukla, noted strategic columnist, is of the view that 'after cost inflation, this year's (budget) allocation will buy

3. 'Antony to seek hike in defence outlay to counter twin threats from Pakistan, China', *The Times of India* (New Delhi), 9th May 2012.

4. 'Defence Ministry wont ask for more', *The Indian Express* (New Delhi), 1st July 2012.

5. Published via internet edition on www.dawn.com accessed on 16 March 2012.

6. Khalid Iqbal, 'India triggers an arms race', available at www.nation.com.pk, accessed 26 March 2012.

7. 'India raises fiscal 2012/13 defense budget to 42 bln USD' at http://news.xinhuanet.com/english/world/2012-03/16/c_131471632.htm accessed on 17 March 2012.

Until recently, there was hardly any linkage between defence expenditure and developmental expenditure in the Indian circumstances

significantly less than (procurements made) last year⁸. According to another expert, while India's defence budget may not be 'unreasonable', but it is 'well below China's corresponding figure of \$100 billion'⁹.

CONTEXTUALISING INDIA'S DEFENCE EXPENDITURE WITHIN DEFENCE – DEVELOPMENT STRATEGY

Until recently, there was hardly any linkage between defence expenditure and developmental expenditure in the Indian circumstances. The primary reason, among others, has been that defence is treated as non-plan expenditure and, therefore, does not come within the purview of the Planning Commission¹⁰. Defence and development were, therefore, treated as two different constructs and budgetary allocation to defence was autonomous. The defence budget, therefore, was hovering over 3% in late eighties and slowly it settled down to an average of 2.5% for much of the decade of nineties and early twenty-first century. This trend was in synergy with the global trends in defence expenditure where most countries have been spending between 2.5 to 3%, with the exception being the militarised states.

However, if one looks into the defence budget in the last couple of years, the trend has been a further downward slide as part of the total Governmental expenditure. This does not mean that defence is being neglected; rather this has more to do with India's new quest for linking defence with developmental needs. Under the leadership of Prime Minister Dr Manmohan Singh, the

8. Ajay Shukla, 'Army modernisation slow, Navy and Air Force push ahead', available at www.business-standard.com accessed on 18 March 2012.

9. C Uday Bhaskar, 'India's defence budget: singular lack of strategic vision', available at <http://southasianmonitor.org/detail.php?type=sl&nid=1665> accessed on 17 March 2012.

10. In fact, defence constitutes the largest constituent of non – plan expenditure of the Central Government after interest payment and debt servicing (Rs 267986.17 crore in 2011-12).

UPA Government has been emphasising on 'inclusive growth'¹¹ and has significantly scaled up the flow of resources to rural areas to give a more inclusive thrust to the development process¹². Simultaneously, both the Planning Commission¹³ as well as the 13th Finance Commission were encouraged to design the development blueprint for the country highlighting a strong bondage between defence and development requirements of the country. The 13th Finance Commission in its report has recommended trimming of non-plan expenditure over a period for better fiscal management. These include interest payment, pension and interestingly police expenditure apart from defence expenditure. Also, the proportion of defence expenditure has been sought to be brought down to 1.76% of the GDP by 2014-15¹⁴. The present budgetary allocations on defence have to be contextualised in this framework and should not be seen as a random allocation.

Further, it is worth mentioning that for defence expenditure, the Ministry of Finance has projected a growth rate of 7% per annum for defence revenue expenditure. Capital expenditure is projected to grow at 10% per annum. The 13th Finance Commission broadly agreed with the contentions of Ministry of Finance and recommended an overall annual growth rate of defence expenditure of 8.33%¹⁵. Also, the approach paper for the 12th Five year plan by the Planning Commission assumes a maximum of 10% annual growth for defence¹⁶. Thus, a review of defence budget allocations in last couple of years (revenue, capital and overall) would go to suggest that the Government has largely adhered to the parameters set by the various agencies of the Government.

11. The concept of 'inclusive growth' is not new in economic literature; however, its acceptance has been quite recent. See, Alfredo Saad-Filho, 'Growth, poverty and inequality: from Washington Consensus to inclusive growth', DESA Working Paper No 100 (November 2010), available at http://www.un.org/esa/desa/papers/2010/wp100_2010.pdf

12. And yet, the allocation for India's rural development ministry is only half of defence budget.

13. Planning Commission, 'Eleventh Five Year Plan: 2007-12', Chapter 1 Inclusive Growth, pp.1-24 is of particular importance available at www.planningcommission.gov.in.

14. 13th Finance Commission, 'Report of the Thirteenth Finance Commission: 2010-2015', Vol I, p.380 available at <http://fincomindia.nic.in>

15. Ibid. p. 83.

16. 'Approach paper to the 12th Five year Plan 2012-17', available at www.planningcommission.nic.in

The Government's commitment to the concept of 'inclusive growth' is further established by the enhanced budgetary allocations for the social sector in last couple of years. Apparently, the Prime Minister wants to trigger a 'development process which ensures broad based improvement in the quality of life of the people, especially the poor, SCs/STs, other backward castes (OBCs), minorities and women....(thus) a growth process which yields broad-based benefits and ensures quality of opportunity for all'¹⁷. This is in no way a distraction or dilution of defence priorities for the country. As the Prime Minister himself asserted on his Independence Day speech in 2012, 'time has now come to view the issues which affect our development processes as matters of national security'. To quote him further, 'if we do not increase the pace of the country's economic growth, take steps to encourage new investment in the economy, improve the management of Government finances and work for the livelihood security of the common man and energy security of the country, then it most certainly affects our national security'¹⁸.

GLOBAL TRENDS ON DEFENCE – DEVELOPMENT LINKAGES

The academic literature or policy studies on the correlation between defence and development do not lead to a uniform conclusion since many other issues come into picture in developing the linkages between them¹⁹. Nevertheless, in exploring a correlation between defence and development components under the umbrella package of 'inclusive growth', the Indian Government, it must be emphasised, is not experimenting something new. Rather, it is a project that is partly based on the successful experiences of India's own neighbour, China. When China initiated the 'four modernisations' in

17. Planning Commission, 'Eleventh Five Year Plan: 2007-12', available at www.planningcommission.gov.in p. 2.

18. 'Prime Minister's Independence Day speech – 15th August 2012' available at <http://www.thehindu.com/news/national/article3774546.ece>.

19. 11th EADI General Conference, Insecurity and Development: Regional Issues and Policies for an Interdependent World (2005), available at http://eadi.org/gc2005/report_GB.pdf ; Necla Tschirgi, Michael S Lund and Francesco Mancini, 'The security – development nexus', in Necla Tschirgi, Michael S Lund and Francesco Mancini, *Security and Development: Searching for Critical Connections* (Boulder, Colorado: Lynne Rienner Publishers; 2010), pp.1-16; World Bank, *World Development Report 2011: Conflict, Security and Development* (Washington DC: World Bank, 2011).

the late seventies, defence modernisation was placed at the fourth place. All resources were directed to modernising the agriculture, industry and science and technology sector – the first three components of the ‘four modernisations’. The defence budget remained static for a decade during 1978-88 and indeed there were many cuts in the numbers and privileges of the Chinese PLA. The PLA was encouraged to explore for alternative sources for resource generation. By constantly harping on ‘peace and development’ as a thematic proposition in international relations, China convinced its PLA cadres to support the resource transfers to developmental initiatives and secure higher rates of economic growth. It was only since mid-nineties that Chinese PLA started getting double digit annual hikes in its defence budget since the Chinese economy was doing well.²⁰

The contemporary trends in global military expenditure also indicate that some of the Western countries that were spending a huge sum are on defensive. In recent times, there have been cuts in the defence budgets of US, UK and France. In US, for example, after rising skepticism over the capability to sustain defence budget couple of years ago,²¹ there were talks of ‘moving towards a sustainable US defence budgets’²². The Obama Administration requested for \$676 billion for FY 2012, less than \$717 billion requested in the FY 2011 defence budget. For the year 2013, the figures have further come down to \$647 billion.²³ Such retrenchment in defence expenditure does not mean that the US is undergoing a ‘graceful decline’ as a superpower;²⁴ rather, it only substantiates what the then Secretary of Defense Robert Gates underlined that; ‘America’s civilian institutions of diplomacy and development have been chronically undermanned and

20. See, Bhartendu Kumar Singh, ‘The political economy of China’s defence modernisation’, *Strategic Analysis*, Vol 29, Oct-Dec 2005, pp. 680 – 705.

21. Bruce Held and James T Quinlivan, ‘Reality check for defense spending’, *Rand Review* (Summer 2008), available at www.rand.org.

22. K Jack Riley, ‘Moving towards a sustainable US defense budget’, Speech given on June 15, 2010 at the S Rajaratnam School of International Studies, Nanyang Technological University, Singapore. The speech is available at www.rand.org/contents/dam/rand/pubs/corporate

23. US Department of Defense, ‘National defense budget estimates for FY 2013’, available at http://comptroller.defense.gov/defbudget/fy2013/FY13_Green_Book.pdf.

24. Paul K MacDonald and Joseph M Parent, ‘Graceful decline? The surprising success of great power retrenchment’, *International Security*, Vol 35, No 4 9Spring 2011), pp. 7-44.

under funded for far too long'²⁵. Similarly, in UK, the Strategic Defence and Security Review (SDSR) published in 2010 recommended a better balance in defence plans, commitments and resources. Accordingly, cuts have been announced in the defence budget that reached a pinnacle of 38.95 billion in 2010.²⁶ The French Defence Ministry has proposed to slash spending by €3.5 billion between 2011 and 2013.²⁷

Most European nations have followed the lead of US, UK and France in trimming down their defence budgets. It should be noted, however, that these cuts are not voluntary; rather a crisis-driven since the western economies have been quite sluggish in recent times. According to the Military Balance 2012 published by the London – based IISS, real-terms reductions in defence spending have between 2008–10 occurred in at least 16 European NATO member states and, in a significant proportion, these real-terms declines exceeded 10%. On the other hand, defence spending in Asia has increased by a relatively substantial 3.15% in real terms over the last year, despite rising inflation. China, Japan, India, South Korea and Australia accounted for more than 80% of the total regional spend. On the whole, the Military Balance concludes that Asia's defence spending is set to exceed Europe's this year.²⁸

WHAT COULD BE A HEALTHY DEFENCE BUDGET FOR INDIA?

The intention of this paper is not to suggest a similar cut for the defence budget since the Indian economy is doing reasonably well (assuming the present slump as a temporary phase) like the Chinese economy. At the same time, one cannot agree with the emotional plank that the budgetary allocations are 'too less in terms of percentage of GDP or Central Government expenditures' and that India fails miserably on other internationally acceptable indicators of a country's defence expenditure such as per capita

25. Quoted in Michael O'Hanlon, *Budgeting for Hard Power: Defense and Security under Barack Obama* (Brookings Institution Press, 2009), p. 1.

26. 'UK defence budget cut by eight percent' available at <http://www.defencetalk.com/uk> accessed on 22 October 2010.

27. 'Defence spending plans of major European nations', available at <http://eurodefenceuk.blogspot.com> accessed on 22 February 2011.

28. IISS, *The Military Balance 2012*, summary available at www.iiss.org

expenditure (less than \$10) or soldier-to-citizen ratio (1.22 / 1,000 citizens).²⁹ Though the Departmentally Related Standing Committee (DRSC) of the Parliament on Defence has strongly recommended a 3% share of GDP as a healthy figure of defence budget but empirical literature does not favour putting defence budget as being captive to percentage factor. 'Such arguments are common', as one US defence analyst has put it, 'usually among those with a pre-determined agenda of either making the defence budget seem high or low'.³⁰

Similarly, the oft-quoted examples of Pakistan and China having higher defence budgets in terms of percentage of GDP / Government expenditure should also be avoided. Pakistan not only has to contend with a sibling rivalry with India that is quite asymmetrical on all indices of power matrix, but the state is itself highly militarised where the Army wields enormous powers in all aspects of decision making. Thus, Pakistan's defence budgets are pre-ordained figures decided in Rawalpindi. In case of China, the PLA is an important pressure group that extracts a large sum in national defenses in the name of building 'comprehensive national power'. This involves creating both internal and external power. Internally, PLA wants to facilitate economic prosperity, domestic cohesion and the social influence of the Chinese Communist Party (CCP). Separatist struggles in Tibet and Xinjiang provinces pose significant challenges to the central government, and some of China's military budget goes towards policing these regions. Externally, greater ambitions in terms of power projection, diplomatic influence and international prestige influence the regime's largesse to the PLA.³¹

The Ministry of Defence, in its recent annual reports, has been quite candid about China's defence modernisation and its enhancement of border infrastructure along India.³² This fact has also been corroborated by the Departmentally Related Standing Committee (DRSC) of Parliament

29. Gurmeet Kanwal, 'Why India needs to spend more on its defence?' www.rediff.com 222nd March 2011.

30. Michael O'Hanlon, 'Defense budgets and American power', Policy Paper No 24, available at www.brookings.edu December 2010, p.2.

31. Sean Chen and John Feffer, 'China's military spending: soft rise or hard threat', *Asian Perspectives*, Vol 33, No 4 (2009), pp.47-67.

32. Ministry of Defence, Government of India, 'Annual Report of Ministry of Defence: 2010-2011', available at www.mod.nic.in.

There exist considerable scope to improve the quality and efficiency of defence expenditure through increased private sector engagement, import substitution and indigenisation, improvements in procedures and practices and better projects management, within the parameters of Government of India policy

on Defence. Many experts have read this development as a looming Chinese threat that could assume a monstrous proportion if Pakistan decides to join the former and pose a 'two-front war' challenge to India. Such hypothetical scenarios have been interpreted quite alarmingly by some defence experts, which they feel, could be met only by budgetary enhancement for armed forces³³. However, national security cannot be quantified and mere enhancement of defence budgets may not ward off a probable 'two-front war' challenge.

A healthy defence budget for the country should not be quantified and linked to the country's GDP or Central Government expenditure. This will always generate polemics without seeking the national security objectives³⁴. Rather, it should seek a harmonious balance in the defence – development debate and focus on optimising the value of money. It is worth to consider the recommendation of the 13th Finance Commission here for improving the quality and efficiency of defence expenditure:

“We (the 13th Finance Commission) are of the view that there exist considerable scope to improve the quality and efficiency of defence expenditure through increased private sector engagement, import substitution and indigenisation, improvements in procedures and practices and better projects management, within the parameters of Government of

33. Gurmeet Kanwal, 'Rising challenges, declining resources', Article No. 1774, available at www.claws.in accessed on 13 March 2011.

34. As was apparent recently when India's rural development minister Jairam Ramesh commented that more than 1000 villages in the country can be freed of the scourge of open defecation at the cost of less than a Rafale fighter jet.

India policy. Efforts in this direction will further expand the fiscal space available for defence spending.³⁵

EXPANDING THE DEBATE ON INDIA'S DEFENCE EXPENDITURE

As mentioned earlier in this paper, a lot of issues do not get adequate space in the off-and-on debate on India's defence expenditure. Such issues need to be debated so as to enhance their impact on India's defence expenditure management. Perhaps the first area that needs to

be discussed is the non-utilisation of allotted defence budget. While defence funds have been fully utilised and even excess appropriations made in some years, this has been rather an exception than a norm. The magnitude of the funds being surrendered has been rather huge and this takes the sheen away from the 'demands for more allocations to defence'. Also, the reasons for budgetary lapses are never discussed nor subjected to public scrutiny. The Ministry of Finance circulars on various aspects of budget management has put a curb on budgetary lapses in recent times. However, there are many reasons why budgets have been surrendered on several occasions in Ministry of Defence. *First*, a major portion of the budgetary lapse is because of procedural delays in executing 'capital purchases'. These involve big tickets purchase mostly through imports from foreign vendors. The formation of a defence acquisition council supplemented by defence procurement procedure (that has been revised many times, the most recent one being in 2011) have been noble steps on part of the MoD but more needs to be done to ensure that capital purchases are made in time. *Second*, the projections of the three services have been consistently on a higher side and even after pruning by the Ministry of Finance, the allotted amounts are not spent within the fiscal year. Various suggestions have been mooted from

A major portion of the budgetary lapse is because of procedural delays in executing 'capital purchases'. These involve big tickets purchase mostly through imports from foreign vendors

35. 13th Finance Commission, 'Report of the Thirteenth Finance Commission: 2010-2015', Vol I, p. 83 available at <http://fincomindia.nic.in>.

time to time to ensure full budget utilisation. In 2004-05, the then Finance Minister had proposed a non-lapsable defence modernisation fund of Rs 25,000 cr but it could not pass the constitutional validation and hence died a pre-mature death. A more appropriate mechanism would be to encourage the services to adopt realistic budgetary allocations based on sound costing and inflation factors. Further, there is a need to create and consolidate a fiscal management information system (FMIS) that would provide real time information on budgetary usage.³⁶

Another area that deserves wider appreciation and consideration in the defence debate is the introduction of outcome budgets³⁷. The Appropriation Accounts for the Defence Services Estimates, being published every year by the Controller General of Defence Accounts (CGDA) does throw, apart from highlighting the usage of defence budget, a detailed light on the performance of two organisations: the military farms and the military engineering services (MES). However, their share in the entire defence budget is miniscule and hence the basket of performance assessment has to be expanded to more organisations. Realising this, the Departmentally Related Standing Committee (DRSC) of the Parliament has been insisting that the Ministry of Defence come out with outcome budgets for more organisations on the lines of 'guidelines for outcome budget' issued by the Ministry of Finance every year. While the Ministry of Defence has agreed to this proposal and in fact even selected the organisations,³⁸ not enough progress has been made on the ground. Either way, the intrinsic value of outcome budget in defence sector needs to be discussed and debated more amongst strategic experts and defence economist in order to maximise the value of money being put in defence budget.³⁹

36. For a preliminary idea, see, Pravin Kumar, 'Designing an appropriate MIS for efficient resource management', *Journal of Defence Studies* (April 2009), pp. 111-125.

37. See, P R Sivasubramanian, 'Defence budget: towards and outcome and programme based system', *Strategic Analyses* (Oct – Dec 2006), pp. 708-723; S C Pandey, 'Assessing the scope of outcome budgeting in defence', *Journal of Defence Studies* (April 2009), pp. 28-46.

38. These are married accommodation projects (MAP), NCC and naval dockyards.

39. See, P R Sivasubramanian, 'Defence budget: towards and outcome and programme based system', *Strategic Analyses*, Vol 30, No 4 9Oct – Dec 2006), pp. 708-723; S C Pandey, 'Assessing the scope of outcome budgeting in defence', *Journal of Defence Studies*, Vol 3, No 2 (April 2009), pp. 28-46.

Another area that deserves discussion is the present mismatch between budgeting and defence planning. Under the present system, the budgetary allocations are based on annual projections by the Ministry of Defence rather than allocating resources to defence five year plans and long term perspective plans (LTIPP). Such mismatch has two negative consequences: *first*, it leads to higher level projections by each arm of the defence forces since there is a competition for (scarce) resources; and *second*, it leads to budgetary lapses since the same money is not spent in the most judicious manner within the fiscal year. There is, therefore, a need to link budget with defence planning in India, both in the short term and long term apart from passing it on time.⁴⁰ At least two purposes would be served by such approach: *first*, it would ensure a sustained (rather than an ad hoc) flow of funds commitment to defence modernisation; and *second*, it would also ensure optimisation of available resources through flexibility in intra-service flow of resources. It is in this context that the proposal of the former Army Chief Gen V K Singh's advocacy of a defence planning commission needs to be discussed and debated.⁴¹

Troop reduction is another area that can help release funds for military modernisation through investments in capital acquisition and technology. Most cases of military modernisation in contemporary world have started with troop reduction and we have a glaring success story in our own neighbourhood, i.e. China. Unfortunately, in the Indian discourse on military modernisation, troop reduction does not figure as a component, partly because it will do away with the dominant position of the army vis-à-vis the other two services, and partly, because the army has committed a huge number to counter – insurgency operations in Jammu and Kashmir, North East and Naxal affected parts of Central hinterland. 'The air force and the navy do not have the same problem, as Stephen P Cohen and Sunil Dasgupta have argued, 'but the army's overwhelming size affects them as

40. The DRSC has indeed strongly recommended early finalisation of both the five year plans as well as LTIPP so that there are no post-inauguration resource problems.

41. 'Army Chief General V K Singh advocates for defence planning commission', available at www.dnaindia.com accessed on 1 May 2011.

Internal resource generation by the defence forces is another area that has not received the requisite attention in the defence budget

well: they too cannot grow beyond a point unless the army can retrench'⁴² Though some bold proposals on manpower reduction as well as reducing the overall cost of the manpower have been made⁴³, these need to be discussed and debated from the defence economics perspective so as to provide correct and comprehensive feedback to the Ministry of Defence that has been mulling over for quite some time over issues related to various aspects of defence manpower with the objective of improving the capital expenditure vis-à-vis revenue expenditure in progressive defence budgets, as suggested by the 13th Finance Commission.

Internal resource generation by the defence forces is another area that has not received the requisite attention in the defence budget discussion, although Mr. Krishna Menon tried to introduce the concept in the late 1950s.⁴⁴ When Deng Xiaoping froze the budgetary allocations to PLA between late seventies and late eighties in China, the PLA was encouraged to find out ways and means to fund its activities. The PLA did achieve the mission through conversion of defence technology for civilian use and resorting to commercial production of many consumable items also, forcing the regime to call for a full stop in mid nineties. No such attempts have been made by India so far. The ordnance factories that could have been a source for profit have not been able to do so and indeed resorted to deficit financing by the Government, as revealed in the annual defence budgets. The Defence Research and Development Organisation (DRDO), consuming six percent of defence budget has not been able to generate any internal revenue since it doesn't have salable technology and patents in its name. These two organisations should be encouraged to look for ways and means to fund their own activities on commercial pattern. Simultaneously, the defence

42. Stephen P Cohen and Sunil Dasgupta, *Arming without Aiming: India's Military Modernization* (New Delhi: Penguin Group, 2010), p. 150.

43. Gurmeet Kanwal, 'Salient issues affecting defence manpower in India', *Journal of Defence Studies* (New Delhi), Vol 4, No 4, October 2010, pp. 31-48.

44. I am thankful to Air Commodore (Retd) Jasjit Singh for this input.

forces should be encouraged to identify their assets that are non-sensitive and could be used to generate revenue. In this context, it is worth mentioning here that the Government Accounting Standards Advisory Board (GASAB), working under the auspices of the Comptroller and Auditor General (C&AG) of India, has worked out a road-map under which the Government will convert to accrual accounting in the next 10-12 years. This means that all Government departments / organisations / agencies would have to work out their assets and liabilities and help the Government in reducing fiscal deficit through generation of internal revenue. Given the gargantuan size of resources under the Ministry of Defence (e.g. defence land), this conversion will be a significant achievement. However, while that is a distant objective, the defence debate could make itself more meaningful by pondering over assets that can be fruitfully used without compromising the security and secrecy factors.

The defence budget can be given a more developmental orientation by creating a strong link with indigenous MIC

Finally, any defence budget must be based on certain philosophical premises. A substantial portion of the defence budget goes in funding India's weapons procurement that constitutes seventy percent of its total weapons requirement. It is rather embarrassing that India has emerged as the largest arms importer in the world during the period 2005-2009. The import projections for the future are again embarrassing since India intends to import arms worth between \$80-100 billion in the coming decade. Apart from reviving sick military industrial complexes (MICs) abroad, it also leads to huge outgo of valuable foreign exchange reserves, not to mention the perpetual dependence of India on other countries for its military modernisation. The defence budget can be given a more developmental orientation by creating a strong link with indigenous MIC. In recent times, the Government has come out with certain initiatives to boost the domestic MIC through offset policies and a liberalised FDI policy. It has also come up with a defence production policy for the first time in January 2011 that should go a long way in strengthening domestic MIC. However, these

policy initiatives apart, the country needs a healthy debate on expanding the policy basket that would help the precious penny within the country and create jobs in the domestic market than abroad.

RECOMMENDATIONS OF THE DEFENCE EXPENDITURE REVIEW COMMITTEE (DERC)

Meanwhile, the Government set up a Defence Expenditure Review Committee (DERC) under Mr. V K Misra, former Secretary (Defence Finance) that has been mandated to look into all possible ways and means to optimize the valuable budgetary allocations to defence. In particular, the committee was asked to recommend, among others, following measures that would bring about:

- Optimal efficiency in the system, with greater focus on information and communication technology (ICT);
- Greater efficiency and economy in supply through services through outsourcing and reorganization;
- Greater transparency and accountability in regard to management of defence expenditure; and
- Outcome orientation in defence spending;⁴⁵

Apparently, the Committee has indeed come out with comprehensive recommendations on many issues concerning curbing of wasteful expenditure in defence and submitted the same to the Government sometime in January 2010. Though an authoritative version of these recommendations are yet to be published, some of them have been informally been made available to media. It is understood that various officers in the Ministry of Defence (MoD) have been further assigned the responsibility of looking into the recommendations of the Committee for further action on the same. In order to have a wider impact, the full report of the Committee needs to be made public so as to solicit opinion on the pros and cons of the recommendations.

45. 'Defence expenditure review', available at www.pib.nic.in accessed on 15 November 2010.

CONCLUSION

India needs to have a defence budget that is affordable, sustainable and capable of funding the defence preparedness of the country. One thing is clear – even though the future defence budgets would be shaped within the parameters of the 13th Finance Commission recommendations, the actual amount is only going to rise further in the same proportion along with the healthy growth of the economy, as indicated by the Government from time to time.⁴⁶ But that should not stop all the stakeholders from thinking on ways and means about making the best of defence budget. The issues mentioned in this paper are not comprehensive; rather, they are representative of the entire gamut of issues that can make the present debate on defence budget more meaningful. The debate can be conducted as part of the whole gamut of defence reforms proposal since there has been demands for an active and informed debate on major issues concerning defence reforms.⁴⁷ With the story of India's rapid economic growth likely to continue in foreseeable future, what India needs is efficient conversion of resources into military power. However, as has been succinctly argued, this depends on the organisation of state, the military, the relationship between them, and between these institutions and people.⁴⁸

It would be prudent to conclude that every suggestion aimed at maximizing the output from defence expenditure must be discussed and debated. There have been suggestions for setting up a strategic planning division in MoD to undertake the task of long term defence planning in a coherent manner that commits the requisite resources after examining alternative choices of policy and their costs. Further, the National Security Advisor (NSA), as has been suggested, can provide another institutional platform where defence economist could coordinate a harmonious

46. 'Defence expenditure in proportion to India's growth: Antony', *Indian Express* (New Delhi), 15th February 2010.

47. Anit Mukherjee, 'Failing to deliver: post-crises defence reforms in India, 1998-2010', IDSA Occasional Paper No 18 (March 2011), available at www.idsa.in.

48. Sunil Dasgupta and Stephen Philip Cohen, 'Military modernization in India', *Seminar* (July 2010) available at www.india-seminar.com.

commitment of resources to defence and development.⁴⁹ The institutions of MoD and NSA must rise to the occasion and institutionalize these suggestions that will further implement vital inputs received from a wider debate on defence budget and defence expenditure.

49. Sushant K Singh and Mukul Asher, 'Making defence expenditure more effective: the urgent need to professionalise long term defence planning and budgeting', *Pragati: The Indian National Interest Review* (February 2010), pp. 19-22.

NUCLEAR DISARMAMENT AND NON PROLIFERATION: THE STEPS TO GLOBAL ZERO

STUTI BANERJEE

Nuclear weapons are the perhaps the most destructive of all weapons invented by mankind. Their use; intentional or unintentional, by design or accident or miscalculation could lead to very serious and catastrophic impact. The impact of their destructive capacity can be felt for decades, along with the consequences of radiation which could pass from one generation to the next. They are, perhaps, the only weapon that can destroy life on this planet as we know it. Today, technological developments have come a long way from the nuclear weapons that were detonated over Hiroshima and Nagasaki. While the size of the warheads has reduced the damage that they can cause has increased many fold. The arsenal that we possess today is capable of bring forth a nuclear winter many times over. These fears make nuclear weapons such a taboo.

The employment of destructive force – both its use and its threatened use – plays a major role in the relations among nations. And it would seem that States are of the opinion that nuclear weapons are suitable nuclear weapons for this role.¹ The primary goal of national security is to maintain national sovereignty. Each nation wants both freedom and peace from

Dr **Stuti Banerjee** is an Associate Fellow at the Centre for Air Power Studies, New Delhi.

1. Lee, Steven P., "Morality Prudence and Nuclear Weapons", (Cambridge: Cambridge University Press, 1993), p. 1.

Nations have to; given the damage these weapons can cause, reduce the possibility of them never being used. To achieve this goal they have to work on the twin aspects of nuclear disarmament and nuclear non proliferation

outside interference, but peace is sacrificed when freedom is threatened. In this case the uniqueness of nuclear weapons has to be considered. What rival nuclear powers threaten each other with is not primarily territorial gain or political domination, which is the traditional form that military threats took. What is unique is that nuclear powers mutually threaten each other's very existence. What is unique about this condition is not the threat of destruction but its mutuality. Never before was it possible that two nations could engage in a military conflict that would result in both being destroyed.² During

the Cold War, the development of a nuclear arsenal was considered essential. It was hoped that with the end of the rivalry between the two superpowers would also translate into nuclear disarmament. However, that situation has not arisen. Today, we have taken a step back with countries exploring the need for nuclear weapons as part of their arsenal. It would seem with the nuclear tests conducted by North Korea, the announcement by Japanese lawmakers to amend the law to explore the option of nuclear weapons and the Iranian crisis, the debate on nuclear non proliferation and disarmament has taken a few steps back rather than forward. However, some thinkers are of the opinion that this not the case. They argue that nuclear weapons and the deterrence that they provide have in fact been the keepers of peace. They believe that in their absence the world would be more prone to war.³ Nonetheless, to assume that since they have never been employed they would never be and this situation of perennial non use would continue would be naive. Nations have to; given the damage these weapons can cause, reduce the possibility of them never being used. To achieve this goal

-
2. Lee, Steven P., "Morality, Prudence and Nuclear Weapons", (Cambridge: Cambridge University Press, 1993), p. 5.
 3. Sethi, Manpreet, *Approach to Nuclear Weapons: Devalue to Discard*, in Manpreet Sethi (edited), "Towards a Nuclear Weapons Free World", (New Delhi: Knowledge World Publishers, 2009), p. 85.

they have to work on the twin aspects of nuclear disarmament and nuclear non proliferation.

The world has been united in trying to eliminate these weapons from the very first instance of their use. The United Nations has over the years made a number of efforts to achieve the goal of universal disarmament. What is commendable is that the efforts to achieve the twin goals of non proliferation and disarmament are not restricted to any one type of States. Those States that are recognised nuclear powers, those that are unacknowledged, and those that do not have them, all have tried to bring forward proposals at various times at various international platforms to highlight the issues and find a way forward. However, success has been elusive.

Nuclear disarmament and non proliferation have once again gained prominence over the past few years. What has further promoted this importance has been the attention that nuclear energy has gained over the past decade and a half. The current resurgence in nuclear technology is being viewed as a direct result of the interest that nuclear energy has been able to generate among the nations.

Energy resources have been important for States for a very long time. One has to glance over history to realise the role that coal and oil have played in the development of States. Energy security gained a lot of importance after the oil shocks that the nations experienced repeatedly from the late 1970's. With countries becoming more and more integrated with world economy and economic prosperity becoming equal to military strength, countries are looking at diversify their fuel resources that provide them with the energy to promote their economies. Energy mix diversification is being viewed as a valid way of achieving energy security. While coal and oil would continue to be the fuel that would be used by States for the foreseeable future, alternative options are being explored; one of these options is nuclear energy.

Over the past few years the resurgence interest in nuclear energy has

The current resurgence in nuclear technology is being viewed as a direct result of the interest that nuclear energy has been able to generate among the nations

been seen as a good sign. While this is most certainly heartening news for the nuclear energy industry, given the setbacks that the industry has faced as a result of the Fukushima accident, it has caused concern among some. It has to be kept in mind that nuclear technology is dual use technology. It is technology that can be used for civilian peaceful use as well as weapons applications. It is this possible, second use of nuclear technology that has both the non proliferation proponents as well as the supporters of nuclear disarmament concerned. The question that is being asked is will the nuclear renaissance in peaceful use that is being welcomed be able to also help address the issues of proliferation and disarmament in the nuclear weapons arena. While the civilian use of the technology is acceptable, the military use is not. It is to limit the latter that nuclear disarmament and non proliferation that has taken center stage.

This paper is an attempt to lay emphasis on the need to disarm nuclear weapons as well as to understand the relation between nuclear proliferation and nuclear disarmament. It is also an attempt to try an answer the question is 'global zero' an option that States would accept.

THE RELATIONS BETWEEN NUCLEAR DISARMAMENT AND NON PROLIFERATION

It would not be wrong to say that nuclear disarmament and non proliferation are complimentary steps that States have to take in order to achieve the goal of universal nuclear disarmament. The speech made by President Obama at Prague has made both governments and nongovernmental organisation hope that some concrete steps would be taken by the United States that may be emulated by others. However, given past experiences there are concerns that this statement by the United States president would lead to non proliferation steps that are a few steps short of elimination of nuclear weapons and that to the extent that it succeeds and the NPT is strengthened, more restraints on peaceful utilisation of nuclear energy would follow. With modest steps being taken for nuclear disarmament being followed with no

concrete follow up actions, most plans have floundered.⁴

Nuclear disarmament is not just about a doctrine that States pursue to reduce, dismantle and destroy their weapons. It questions the validity and need of nuclear weapons. It is a process through which State's are trying to devalue the importance of such weapons. This has a bearing on the process of non proliferation. Proliferation can be both in terms of quality and quantity of weapons as also the spread of weapons to other States and non state actors. Non-proliferation is the prevention of the spread of nuclear weapons, in both spheres.

Neither of the process can be confined to a region or a number of States. As States start to disarm and the goal of achieving global zero is within reach non proliferation gain importance. The possible risk of the remaining limited number of nuclear weapons being used would continue to remain. It is at this stage that the non proliferation regime has to be the strongest. The possibility of regional proliferation would be a threat to global disarmament. It would be impossible to achieve any level of non proliferation if States are unwilling to commit to the legal frameworks of disarmament set up by international treaties.

It is the relationship between the two that is at the heart of the Nuclear Non Proliferation Treaty (NPT). If one tries to concise the treaty in to a few sentences, it can be said that the treaty envisages that the non nuclear weapons States would abide by the agreement to non proliferation while the nuclear weapons States would agree to take steps to disarm.

Future efforts to achieve global zero would thus depend on two parallel treads. The first is the achievement of an international consensus on certain substantive issues relating to nuclear weapons such as their irrelevance as military instruments, the security hazard posed by their very existence, their cost, the human and environmental consequences of their production and use and their widespread identification as a source of prestige or status. The second trend would be the multidimensional political process to build and sustain a political consensus and involving the participation of not

4. Lodgaard, Sverre, "Nuclear Disarmament and Non Proliferation: Towards a Nuclear Weapons Free World", (London: Routledge, 2011), p. 170.

Developments achieved in weapons technology, both nuclear and conventional, we today have been able to develop nuclear warheads that are becoming smaller in size but continue to maintain the force needed for maximum destruction

such governments, but also individual citizens, regional and international organisations.⁵

THE NEED TO DISARM

Nuclear disarmament has been a topic of concern for a very long time. The dream of a nuclear free world is not a recent one. Attempts were made during the Cold War to introduce deep reductions in strategic nuclear forces. However, the attempts were unsuccessful due to the lack of interest shown by the States to disarm in an ideologically hostile world.

In the post Cold War period there was a marked difference in the importance that was given to the 'ultimate weapon'. It was also hoped rather prematurely that the end of the Cold War would also lead to a limiting of nuclear weapons. However, that has not happened. Today in fact we have a situation where nuclear weapons are seen not just as the weapon of last use but for some countries it has become the only weapon that they can use for both defence as well as for deterrence. In such a situation it is not just important but necessary to have an established policy on when and how these weapons would be used and against what adversary. A transparent policy will go a long way in reducing threats both perceived as well as real. Which begs the question is global zero an achievable target even in the distant future.

With the developments achieved in weapons technology, both nuclear and conventional, we today have been able to develop nuclear warheads that are becoming smaller in size but continue to maintain the force needed for maximum destruction. They are being mounted on weapons that are built to be precise in target accession and annihilation. The definition of the opposing force has also changed to include terrorist organisations, which may have the support of one or more States or the use of their territory. It

5. Rydell, Randy, *Advocacy for Nuclear Disarmament: A Global Revival?*, in Catherine McArdle Kelleher and Judith Reppy (edited), "Getting to Zero: The Path to Nuclear Disarmament", (Stanford University Press, Stanford, 2011), p. 39.

is possible that a State may use nuclear weapons to counter terrorist threats emanating out of their use of chemical or biological weapons. This has become a possibility as it becomes apparent that States are no longer restricting the 'no first use' policy to just nuclear weapons States. Threats that can now possible warrant the use of a nuclear weapons range from:

- A nuclear weapons attack.
- Use of nuclear weapons on the troops of the country anywhere in the world
- The use of chemical or biological weapon by any State. These weapons have gained equal weight age as nuclear weapons and are considered to require similar response.
- Nuclear weapons States have also kept the option of using nuclear weapons against non nuclear weapons States if they feel so threatened.

Ambiguity in the policy of one nation is possible motive for another to feel threatened enough to either develop nuclear weapons or enhance her existing arsenal

Ambiguity in the policy of one nation is possible motive for another to feel threatened enough to either develop nuclear weapons or enhance her existing arsenal. Nuclear weapons development has a domino effect. The very knowledge that a country in the neighbourhood has access to nuclear technology prompts most other nations to explore the option as well. While there have been a lot of debates on making the process of verification more stringent there is the question of sovereignty of a State and within that to pursue a course of action that protects her interests. If it is in the interest of the country then it is very difficult to stop her from developing or gaining access to the technology.

It is for this reason that the process of verification needs to be strengthened. The International Atomic Energy Agency (IAEA) is charged with the process of verification. The IAEA keeps a close watch on the accounts of countries dealing with nuclear material. However, the IAEA is grossly understaffed as well as under budget to be able to conduct all its duties effectively and efficiently. To be able to do so the agency would need

to be allowed to conduct its duties without the interference of States and its findings have to be accepted as impartial. It does not credit the agency that from time to time it is accused of being an agency that is controlled by the permanent members of the Security Council. It not just devalues the organisation but also the important work that is being done by it. As the number of States exploring the development of nuclear energy grows, the IAEA in the near future will face a massive shortage of personnel to conduct physical verification in the large number of countries that would be competent in nuclear based technology. A key challenge that the IAEA faces in defining the terms of an abolition agreement is on how to relate to multi-use and dual-use activities, material and equipment. The political and economic issues involved would mean that there are substantial potential for disagreement among nations. Since these issues also involve economic considerations the question of a State's security not just in the nuclear but also in the conventional dimension would require cooperation.

Verification also gains importance in the wake of clandestine networks that trade in nuclear technology and material. As has been pointed above terrorist organisations continue to threaten States and their institutions on a daily basis. While it is debatable if terrorist outfits would ever have the finance as well as the technological competence to build a nuclear weapon, it is still possible for them to make what is termed as a 'dirty bomb' with radioactive substance as it is core ingredient. Thus it becomes very important for States to invest in verification and a safeguard regime that provides a system whereby there is enough technological expertise available to ensure adequate verification commitments are being undertaken to abandon nuclear arsenal. It also provides adequate guarantees that nations are complying with their commitments. Such a regime would be possible through the combination of technological, diplomatic and statecraft skills.⁶

Trade in nuclear technology, material and know how is not forbidden. This trade has to be done within the guidelines as set under the NPT and the various treaties and agreements that have followed from it. However, the

6. Sethi, Manpreet, "Towards a Nuclear Weapons Free World" in Manpreet Sethi, ed., *Approach to Nuclear Disarmament: Devalue to Discard*, (New Delhi: Knowledge World Publishers, 2009), p.96.

NPT is a treaty that is not binding and the countries that have signed it have the option, with sufficient warning, of withdrawing from it. Verification, as has been pointed out is a very long drawn out process and not in which total accountability of material can be guaranteed. In such a situation it is not impossible for a State to acquire nuclear technology for peaceful means and to thereafter divert it to military use. One has an example of this in the Iranian program, where mounting evidence points to it being a military rather than the claimed civilian program. It can be argued that the countries that believe in such transgressions can be punished by ensuring that the international community acts as one. However, for them to have an impact sanctions can not be applied selectively and they have to be abided by all States. An effective means for sanctions can be to set up barriers in the acquisition of uranium. It is extremely difficult for any reactor to function without uranium. All States keep a stockpile of uranium for use, nonetheless, for any reactor to function at its full capacity it has to have a steady supply of uranium. There are very few countries in the world that supply uranium. Thus, it would seem the most effective method of sanctions to dissuade a country from developing nuclear weapons would be to try and stop the supply of the raw material needed for the reactor.

It has also been argued by some that universal disarmament would not be possible as the knowledge of how to make nuclear weapons is now available. They fear that it would be very easy for any State to build such a weapon in future is very high. However, what the proponents of this argument are unable to comprehend is that it is not the technology that is being eliminated it is need for weapons. Current warheads can be used for peaceful means. An example of this was the use of nuclear material from Russian warhead by America as fuel for her civilian reactors. Such steps allowed for not just safe disposal of the nuclear material but also for non military use. States have to work together to create condition where nuclear technology for peaceful use to become more prominent. Nonetheless, a continuous review of the civil nuclear industry would be necessary. Unfortunately, nuclear power generation is related to nuclear proliferation, in so far as the fissile material is needed to have a controlled chain reaction in a nuclear reactor

Nuclear weapons proliferation as with conventional weapons, works on the domino effect that is prevalent in international relations security

are the same as those needed for an uncontrolled chain reaction in a nuclear bomb.⁷ As a result with the rise in the number of reactors, there would be a rise in the amount of fissile material leading to a greater possibility of them being used for weapons proliferation.

Resistance to stronger non proliferation measures is worrying given that there is going to be a significant expansion in nuclear technology use in the coming years. The problem as can be viewed

is one in which the nuclear weapons States as well as the non nuclear weapons States have to work together to strengthen the disarmament and non proliferation regimes. Article VI of the NPT commits all parties to the Treaty to work for nuclear disarmament. This provides the non nuclear weapons States the opportunity to contribute more in establishing such a regime by leaning on the nuclear weapons States to do more in the name of international security and with reference to international norms. They can also contribute by deepening their own commitments to stay non nuclear.⁸ They can also contribute by diminishing the value of a nuclear security umbrella. The goal would be to devalue the importance of security as provided by nuclear weapons.

There is also the question of promoting the idea of nuclear weapons free zones. Nuclear weapons proliferation as with conventional weapons, works on the domino effect that is prevalent in international relations security. If a country 'A' in the neighbourhood acquires a weapon then it will be viewed as a threat by some other State(s) in the neighbourhood, which then strives to get weapons that are more destructible to deter an attack. Possession of large nuclear arsenals brings about a basic change in the relationship between two opponent nations, especially in the military dimension. What makes these changes possible is not just the procession

7. Andreis, Marco De and Simon Moore," Is the Civil Nuclear Industry relevant to Nuclear Disarmament?" in Catherine McArdle Kelleher and Judith Reppy ed., *Getting to Zero: The Path to Nuclear Disarmament*, (Stanford: Stanford University Press, 2011), p. 283.

8. Lodgaard, n.4, p.168.

of nuclear explosives themselves, but also a host of other technological innovations. One set of innovations is the development of processes for making the weapons compact and relatively inexpensive, making economically feasible the deployment of large nuclear arsenal. Another is the development of reliable and swift means of delivering the weapons over intercontinental distances, insuring that a nation could quickly bring its opponent under direct nuclear attack. A third set is the development of ways of making the delivery system, especially missiles, less vulnerable to attack, which would guarantee that a nation can deploy a capacity to retaliate that would survive a surprise attack.⁹

For the three States of China, India and Pakistan, secrecy is very important and for any non proliferation and disarmament regime to be successful this element has to be forsaken

It is hoped that non proliferation and disarmament at a later stage would have similar effects. If the threat is reduced or is taken out of the equation of the relationship then it would be beneficial for all. It is perhaps for this reason that there is a lot of attention and focus on the issue of a nuclear weapons free zone for the Middle East. It has been argued rather effectively that it would be in the interest of both Iran and Israel to promote such a venture as well to actively participate in it. A nuclear weapons free zone for the Middle East would provide both the countries with the security that they both require. It would go a long way in not just allaying Western fears of Iranian intentions but would also give Iran the much needed space to develop her nuclear energy sector without the threats of sanctions. A similar zone with similar effect is hoped for south Asia as well, which has the distinction of one recognised and two not recognised nuclear States bordering each other with a history of clashes. For the three States of China, India and Pakistan, secrecy is very important and for any non proliferation and disarmament regime to be successful this element has to be forsaken. For China, nuclear weapons are viewed in relation to the power that she

9. Lee, Steven P, *Morality, Prudence and Nuclear Weapons*, (Cambridge: Cambridge University Press, 1993), pp 4-5.

enjoyed before she was dominated by the West and a projection of the position that she hopes to occupy in the future. For India, the weapons are also rooted in her power ambitions, as much as in her threat perceptions. For both countries it fuels the national ambition and the international role that they foresee for themselves in the international order. It is hoped that the establishment of a nuclear free zone in the region would help in bringing down tension and establish peace and stability.

CONCLUSION

Global zero means that all countries have eliminated their nuclear arsenal as well as pledged to not build any such weapons in the future as well. To believe that at some point all countries would give up on nuclear weapons is a situation that would happen in the much distant future. However, steps need to be taken in this direction if expectations are to be realised and made into a reality.

The primary defining characteristic of the minimisation point, although not its only one will be a massive reduction in the number of nuclear warheads of all types still in existence. The other steps that States could take to help achieve global zero would be complete the ratification of various treaties such that a powerful arms control regime with respect to nuclear weapons can be established. States have to negotiate treaties to reduce the need for weaponisation and to build missiles of longer ranges, their delivery systems as well as to eliminate short range nuclear weapons designed for forward deployment. It would be in the interest of both nuclear disarmament and non proliferation to achieve peaceful negotiation with North Korea and Iran. While at the same time steps have to be taken to ensure that they are seen as examples by other States not to breach the various treaties like the NPT and the Comprehensive Test Ban Treaty (CTBT). Necessary provisions have to be made such that it is insured that nuclear weapons are not obtained and thereafter used by non state actors. Political conditions should be created that provide for sufficient space for regional as well as global cooperation and reduce the prospect of war and aggression such that the question of nuclear weapons use has no remaining deterrent utility.

Create an international legal regime that is able to enforce conditions that ensure that States that are breaching their obligations are not able to retain, acquire or develop nuclear weapons and will be heavily penalised. Create fuel cycle management conditions that will ensure complete confidence that no State has the capacity to misuse uranium enrichment and/ or plutonium reprocessing for weapons development purposes.¹⁰ The objective would be not to just cut down on not just strategic weapons but weapons of all classes and not just those that are deployed but also those that are held in storage and those waiting for destruction (but capable of being reconstituted and deployed).

We are today talking about limiting the number of nuclear weapons to what would be considered a 'credible defense'. However, this raises a number of questions such as what is credible deterrence, who would decide for different countries what credible deterrence is. The biggest question would be verifying that the countries are adhering to the set limits. To say that this system would work on trust would be a giant leap of faith for countries some of which might not have the have nuclear weapons but find that they may be threatened by them. A possible solution could be a credible force posture with verifiable deployment and alert status that would reflect the doctrines of non proliferation and disarmament. There have been talks to achieve progressive achievement of interim disarmament objectives by 2025 in a minimisation point by moving towards low numbers, a world with no more than two thousand nuclear warheads (less than ten percent of today's arsenal). To also say that countries would be able to keep a certain number and on a hypothetical scenario, even if that number is one per countries, there are one hundred and ninety eight member countries in the United Nations. If all of them do at some point of time acquire the technology to make the bomb, it would mean one hundred and ninety eight bombs. That number is unfortunately not zero or a number that is even close to zero. To say in such circumstance that we have achieved global disarmament is not true. What one would hope should be acceptable would

10. Evans, Gareth and Yoriko Kawaguchi, ed., *Eliminating Nuclear Threats: A Practical Agenda for Global Policymakers*, (Tokyo: International Commission on Nuclear Non Proliferation and Disarmament, 2009), p. xxx.

be to announce the number of weapons that the arsenal has been reduced too as a first step towards global zero.

It has been acknowledged that a world free of nuclear weapons is achievable and is the need of the hour. Nonetheless, it is equally understood that global zero for the moment is a distant dream. It would seem that nuclear weapons continue to be the weapons of choice for States for security. It has to be kept in mind that not all States develop or acquire these weapons to play similar roles in their strategic and defence arena. They are developed to provide deterrence as well as parity in an unsecure international environment. However, how does a weapon that can destroy human civilisation provide it any form of security? For the world to be without nuclear weapons one has to first achieve a world that is secure in itself and thus no longer in need of these weapons.

GRAND STRATEGIC APPROACH: A PERSPECTIVE

PRATEEK KAPIL

Ever since the birth of the modern Indian nation, policymaking has been compartmentalized into distinct fragments of analysis and implementation. National Security, Foreign Policy, Economic Growth, Internal Security, Social Stability, Governance, Human security, Military affairs etc. are studied just as in most modern nation-states of the world, as highly specialised and distinct issue areas requiring highly quarantined and focussed attention. Generalist approaches are treated as regressive and specialisation is of paramount importance to innovate creative solutions for the unique and persistent problems cropping up in these issue areas. While it would be foolhardy for me to criticize this progressive impetus towards specialisation which is critical to success in competitive and complex issue areas like national security and foreign Policy, the question still beckons whether we are keeping track of how all these tools of national policy are contributing to the overall Indian national project. Thinking ecologically about national security and foreign policy as part of the larger national progress in the international and domestic military-politico-economic environment is thus the primary objective of this paper. This is the quintessential feature of thinking in terms of grand strategy. Acknowledging linkages, interdependence, interactions, synergies, exclusivities and externalities are fundamental to strategizing by the Grand strategic approach. In short, Grand Strategy is defined as a

Prateek Kapil is a Research Associate at the Centre for Air Power Studies, New Delhi.

We do not have an Indian version of the US Goldwater-Nichols act which would spell out the legal imperatives of articulating a Grand Strategy document by the heads of the government

strategy employing all tools available to a nation in achieving defined national goals.

While this interdependence and interdisciplinary interaction is often acknowledged by proponents and leadership alike, there is no institutionalized effort to articulate an Indian Grand Strategy. We do not have an Indian version of the US Goldwater-Nichols act which would spell out the legal imperatives of articulating a Grand Strategy document by the heads of the government for e.g. The NSS (National Security

Strategy) document. On the contrary, strategists like Ashley Tellis¹ would argue, that non-articulation is itself a useful and deliberate strategy. They insist that India has always had a grand strategy which is often reflected in the continuities in the various policy statements and consequent policies but articulation per se is a complex and consequential exercise. While it is fair to say Grand strategic documents cannot be produced overnight, a sense of political direction is critical to this process and the leadership cannot abjure itself of that responsibility. There is a need to set a similar agenda for the strategic dialogue in India. Ad hoc policymaking is detrimental and strategic thinking needs to be invested in grand strategic goals and means. The NSA had recently commented that for a civilisation and a state like India not to have a strategic culture is impossible. He further elaborated that a set of shared beliefs, assumptions and modes of behaviour, derived from common experience and accepted narratives (both oral and written) that shape collective identity and relationships to other groups determine appropriate ends and means for achieving security objectives. Grand strategy is an identifiable set of basic assumptions about the nature of international and military issues from which operational policy flows².

1. Ashley Tellis, "Non-Alignment Redux, The Perils of old Wine in new Skins", *carnegieendowment.org*, July 2012. Available at: carnegieendowment.org/2012/07/10/nonalignment-redux-perils-of-old-wine-in-new-skin/co13 accessed on 16 Oct 12.
2. Talk delivered by Mr. Shiv Shankar Menon, NSA, Govt. of India, 'P.C. Lal memorial Lecture', April 2, 2012, organised by Air force association, cited in journal *Defence and Diplomacy*, vol. 1, no.3, April-June 2012.

Why do we need Grand strategy? We need it because it is the art of reconciling ends and means. It involves purposive action-what leaders think and want. Such action is constrained by factors leaders explicitly recognize (budgets and technology) or implicit ones like cultural or cognitive screens. It is an excellent way to bridge theory and practice. Grand Strategy begins with theory: leaders' perception about the working of the international system and role of their own state. Simultaneously it is codified in policymaking. Grand strategy may be born in the abstract or tangible debates at the higher echelons of power, but it is tested in the collective action of junior officials.

Grand strategy blends the disciplines of history (what happened and why?), political science (what underlying patterns and causal mechanisms are at work?)

Grand strategy lends itself to vigorous interpretive academic debates, yet it is so realistic that practitioners, current and former, can and must contribute for it to be properly understood. It leads to constructively critical appraisals of leaders. Grand strategy blends the disciplines of history (what happened and why?), political science (what underlying patterns and causal mechanisms are at work?), public policy (how well did it work and how could it be done better?), and economics (how are national resources produced and protected?). Grand strategy is useful because it makes history more relevant, political science more concrete, public policy more broadly contextualized, and economics more security-oriented.³

In the military context, Edward Luttwak describes the level of Grand Strategy as the level where the interactions of the lower, military levels yield results within the broad setting of international politics, in further interactions with the non-military relations of the state: the formal exchanges of diplomacy, the public communications of propaganda, secret operations, the perception of others formed by intelligence, and all economic transactions of more than purely private significance. On this

3. Peter Feaver, "What is grand strategy and why do we need it?", *foreignpolicy.com*, Shadow Government Blog, April 8th, 2009. Available at shadow.foreignpolicy.com/posts/2009/04/08/what_is_grand_strategy_and_why_do_we_need_it?wp_login_redirect=0.

level, the net outcome of the technical, tactical, operational, and theater-strategic emerges in continuous interaction with all those dealings between states that are affected by, and in turn affect, what is done or not done in the military sphere within any one state. Grand strategy thus becomes a confluence of the military interactions that flow up and down level by level, forming strategy's "vertical" dimension, with the varied external relations among states forming strategy's "horizontal" dimension.

The analogy that he invokes is that of a knife fight between two cut throats in an alley: their grunts and screams may be seen as forms of diplomacy and propaganda; one or the other may attempt to employ economic inducements, offering money to stop the fight; some intelligence and deception will be present as each tries to misdirect the other by feints. In this fight we can recognise a tactical level, formed by reciprocal thrusts and parries, and a technical level, in the qualities of their knives. Even the participants themselves recognise distinctions between the levels, because they may plead, threaten, and bargain with each other as they continue to fight. Thus, Grand strategy is present even on the smallest scale. One distinction between this analogy and application in actual international politics is that the entire institutional and political aspect that characterises the conduct of states is absent in the analogy and with it the permanent contradiction between linear-logical political arrangements and the paradoxical logic that rules conflict. In the real world, Each government has its own goals, if only implicit, and each therefore measures results differently so that the same outcome ,say the preservation of an unchanged status quo, may be deemed highly successful by one government and a crushing failure by another. Whether we imagine Grand strategy in static terms as an edifice or in dynamic terms as a sort of complicated fountain, grand strategy is the conclusive level, where all that happens in the vertical and horizontal dimensions finally comes together to determine outcomes. Brilliant victories at the technical, tactical, operational, or theatre strategic level, or for that matter diplomatic blunder, may have the opposite effect or even remain without consequence in the

confluence of grand strategy.⁴

It is often feared that declaring a grand strategy can often lead to rigid self-fulfilling prophecies which restrict flexibility and manoeuvre. The Cold war is a convincing retort to this point where articulating the grand strategy of containment helped American leaders resolve many equally persuasive choices. It was important for the actors involved in this case to know what and why they were doing what they were. Containment linked the broader goal of American pre-eminence in international system with incremental weakening of the Soviet Union employing domestic strategies of strengthening export led growth and hastening inherent weaknesses of centrally planned pricing and political authoritarianism. Militarily, Containment solved the dilemmas of command control structure of the NATO nuclear umbrella, the alliance structure of the West and the tools of warfare necessary to achieve those objectives. Conventional infantry warfare for territorial gains backed by superior artillery and bomber aircrafts were supplemented by deterrence theories based on signalling, intelligence and reconnaissance. 'Military objectives' now included straining the domestic economy of the adversary as demonstrated by the Strategic Defence Initiative. Thus Containment as a grand strategy successfully recognised and exploited 'all tools available to US to achieve desired national objectives'.

Clausewitzian dictum of war as continuation of politics by other means is another significant feature of any grand Strategy. Attaching political or even economic conditionalities to any military initiative is critical to furthering national interests in the short term and long term survivability of military strength. Force used should always be commensurate with the precise political objective which should be further scrutinised for its desirability. The Americans learnt this lesson in the Korean & the Vietnam War and India in Sri Lanka and more severely in 1962 where a distinct interpretation of the use of force by the political and military establishments led to avoidable failures for both countries respectively. The use of force in touch with Economic and Political imperatives and constraint is often more effective than overreach

4. Luttwak, Edward, Book, "*Strategy- The Logic of War and peace*", BelKnap Press of Harvard University Press, Massachusetts, 2001, pp. 209-211.

Grand strategy can be conceived in different ways. Some nations weave it around principal threats, others towards particular issue goals and others in terms of regional architecture

or apprehension that it often oscillates between. Leaders are well served by having a rough idea of their grand goals when employing tools of foreign policy and national security. It has to be cautioned that Grand strategy does not mean having a perfect strategy without failings. Concepts like 'national interest', offensive and defensive deterrence, balance of power, role of state, military superiority, Sustainable growth are often transient and ambiguous with a scope for nuances. But the real test of leadership lies in resolving precisely this or at least attempt to. In that sense, the real utility

of the grand strategic approach is to impart direction and coherence to policy making. In the process, the approach helps the leaders of a nation-state to engage in national introspection leading to greater bipartisan support and consensus on the aforementioned variables. It puts limits to the overreaching tendencies in great power politics and provides practical road maps for middle powers like India. In addition, the approach acknowledges the prerogative entitled to any leadership to declare, convince and practice the national vision of their choice with checks and balances consistent with domestic politics and the anarchic international system.

Grand strategy can be conceived in different ways. Some nations weave it around principal threats, others towards particular issue goals and others in terms of regional architecture. This is not to say that a comprehensive approach would not look at all these aspects together. It only means that in resolving equally persuasive choices, one has to be categorically prioritised over the others. I want to reemphasise the purpose of Grand strategy is to resolve deadlocks by underlining the criteria to distinguish between equally persuasive choices. It is action oriented rather than just analysis-oriented. Walter Russell Mead⁵ terms this as a choice between the lighthouse approach and the mirror state approach. In a lighthouse approach, the state is conceived

5. Mr. Walter Russell Mead, Lecture, "*US Grand Strategy from- from theory to Practice*", December 10th, 2009, John Hopkins University. Available at: www.youtube.com/watch?v=MpI8TjJPG4 (Official John Hopkins Youtube Channel) accessed on 12 Sep 12.

in the classic sense. The leadership conceives of a grand plan based on the leadership's convictions of the state's goals and direction - the security and foreign policy are derived from that plan. A state with its best and the brightest in leadership is thus imagined as emitting a beam of light for the nation to follow. A mirror state strategy is analogous to a brawl on the ship deck as to which direction the ship should move. This state tries to reflect the various interests and contradictions in the society. There is no grand strategy as an intellectual construct in the abstract sense. The ship moves in the direction of the larger majority. The grand strategy emerges from the course of history and the various patterns that the history throws. To strategise for a mirror state is to look for patterns that have emerged in the political and military history of a nation. The United States is seen as one of these states. However, it is open to scrutiny as to which approach is suitable for nations as diverse as Germany, India, Brazil, Russia or China.

Indian Grand Strategy is premised on the fact that unlike China, India's emergence does not cause concern as India embraced an open industrial economy after becoming a democratic republic

Every State needs to strategise uniquely. Indian Grand Strategy is premised on the fact that unlike China, India's emergence does not cause concern as India embraced an open industrial economy after becoming a democratic republic. Yet it has to be said that India is a big power but it is not a continental power like China or Germany. It is a swing state like pre first world war France but only a systemic/fundamental change can bring it closer with its continental adversary just as the cold war brought Germany-France after centuries of intense rivalry. Britain was the principal offshore balancer in Metternich and Bismarck-Era Europe stabilising the intense rivalries between powers on the continent of Europe. In present day, US plays that role in Europe and East Asia. The principal Asian continental power of 21st century is China. Russia and Germany have the same potential in Europe but Germany has been tied to a stable alliance system (EU and NATO regimes) laden with common values and security interests and Russia is still rebuilding while restraining its focus on the periphery of central Asia

and Eastern Europe. In the long run, Russia is the Eurasian swing state whose choice of focus eastward or westward will depend on the pattern of Chinese Ascent and consequent behaviour. The Asian continent on the other hand, is far from the institutionalisation of the peace dividend which the two world wars forced western powers to adopt. Asian powers are still developing and the balance of power system is still evolving in the region. There are fewer common values and hence no offset for competing interests. States like Brazil and South Africa are influential outside actors in the Grand Eurasian strategy as long as the western hemisphere is primarily controlled by American powers and African neutrality is maintained which can be reasonably assumed in the near future. They have issue specific Grand Strategies primarily based on a fair international economic regime and safeguards of international public goods. Similar grand strategies might take shape in other middle powers like Argentina, Nigeria, Australia, Scandinavian and Benelux countries. Big powers on the other hand will look for preponderance rather than shared responsibility and cooperation. The world has flattened but the balance of power system among sovereign states is far from irrelevant because sovereignty and nationalism have not eroded in the face of globalising forces. In some cases, they have accentuated that trend. The probability of overt conflict has reduced due to presence of nuclear deterrence and economic interdependence but myriad non-traditional forms of conflict persist. For e.g. China's lowering of currency value and investment in US Government treasury bonds makes the dollar vulnerable to deliberate dumping should China choose to exercise that option in the larger Grand strategy of forsaking short-term losses in favour of long term damage to Dollar's international status. US on the other hand, is looking to continuously diversify its economy to high end manufacturing to maintain its strategic advantage over China and exploit recent Chinese vulnerabilities due to aging population and rising labour costs. India in this scenario will look to provide an alternative similar to other Asian powers while looking to balance Sino-Chinese Trade in its favour simultaneously hedging against political confrontation with the great neighbour. The grand strategy of the nation thus will ultimately depend on these different factors that their respective leaders have to resolve.

INDIAN DIMENSION

Indian Grand Strategy has never been articulated in a landmark official document or a policy statement. It has not manifested in itself in the pursuit and implementation of a particular force structure militarily. It has not been personality driven barring the omnipresence of few principles institutionalised by the first Prime Minister. The primary goal of Indian Grand strategy so far has been merely the preservation of its own exceptional values like Democracy, Secularism, Welfare market economy, Autonomy and Restraint. This is in part due to the still-emerging status of India's military and economic power. Indian Grand Strategy has been mostly a corollary of the Grand Strategies of Big powers like the US, erstwhile Soviet Union and 21st Century China. It has been reactive of their strategies. Although partially successful, such ad-hoc policy making is not necessarily the best way forward. India has 'restrained' from systematically defining and pursuing National Goals. It has been pragmatic enough to engage in balance of power politics as shown by the nuclear tests and the five border wars since independence but has been shy of insisting or exercising coercive power for national goals. The primary tool of Indian coercive power has been economic so far. But that has also blunted under attacks concerning the slow pace of reforms. Short of envisioning a world view or Grand Strategy, India has not even been assertive in benefitting from the existing system. A simple case in point is how China has successfully exploited the liberal market economy and Global US engagements to transfer the burden of providing global public goods on the latter while proceeding with her own economics-without-conditions-strategy worldwide. She has followed Deng's 28-character and Sun Tzu's Shi strategy to the letter and has been reasonably successful in achieving her periodic goals. Militarily, China has tried to pursue a A2/AD strategy against the US in east Asia while exercising conventional and nuclear superiority over the neighbours. India needs to articulate a strategy of her own. What are India's goals? If security is the primary objective then what is India's limited war doctrines for China and for maintaining conventional superiority over Pakistan. However, if Security and Development are both central goals then are overt alliances more feasible and achievable alternative for security?

Indian Grand Strategy has to have a long term view of which potential partners can provide tangible support and which have larger capacity to sustain values India considers important in times of differences

Development on the other hand would require insistence on equitable trade and increased sourcing of high-end technologies. In a globalised world, it will require increased education funding, reduced deficit spending and increased investment from abroad. Allies and Adversaries should be judged on these necessities rather than a predisposition to history or a particular value. Can trust and intentions be chosen over capabilities and interests? Values are important shock-absorbers but they are not the catalysts in an anarchic international system. National interest and *Realpolitik* serve that purpose. On the other hand, if a leader chooses to invoke values as primary then he should strategise for the viability and feasibility of institutionalisation of those values domestically, regionally and globally. In addition he has to do it within a temporal dimension. UNSC reform, IMF and World bank voting structures, Enforcement mechanism of the UN, legality and implementation of the human rights charter, the weaknesses of collective security and collective action, nuclear disarmament, instances of moral hazard and agreement on public goods are some of the age-old problems in a value based international system. An Indian leader has to strategise for these. Indian grand strategy cannot perhaps look for preponderance in a world of US-China pre-eminence. But it should look for balancing the region and greater influence globally. In other cases, it should look to benefit from the system which it cannot influence directly. NPT, NSG and MTCR regimes are one such example. India needs to incentivise partnership and dis-incentivise adversaries in tangibles rather than rhetoric. Military, India needs a force structure and a sourcing strategy (procurement, maintenance and development). India needs to invest in asymmetric warfare technologies of Air and naval power to provide teeth to her defensive military strategies towards China. To counter terrorism, India needs efficient elint and sigint technologies without treading on civil liberties. Geo-politically, India needs a friendly south-Asia. Should India look for a free

trade area in South Asia and deprioritise reciprocity in the region? The Sino-Indian relationship has to be based on peaceful negotiation, mutual respect, communication and a fair balance of trade even if that means a larger share for China. An aggressive gesture should be responded in kind through various non-military punitive mechanisms as well. Posturing and signalling is very important in this

regard even if the punitive measures fall short of influencing the adversary. Indian Grand Strategy has to have a long term view of which potential partners can provide tangible support and which have larger capacity to sustain values India considers important in times of differences. The availability, diversity and urgency of these partnerships and the pace of India's own hard power will determine these outcomes. Does the recent western interest provide a strategic opportunity for India and what is the window outside which this opportunity might be lost?

The domestic dynamic is equally important for a Grand Strategy. No grand strategy can preclude domestic policies. Indian grand strategy has to be cognisant of factors like centre-state relations, liberal market economy, a social safety net, a people's army under civilian control, increased innovation and high-end manufacturing, simpler regulations, proportional representation and voting system, prioritisation of education, health and moderate policing mechanisms. India has adopted a liberal democracy and market economy. She is one of the few nations where democracy has preceded industrialisation and growth. This provides India with a unique set of challenges and advantages. The question of fundamental reform in core areas like infrastructure, electoral systems, governance, pensions, energy security, diversification and sustainability, technology driven access and inclusiveness are monumental tasks for the leadership. These have immense bearing on our foreign policy and national security. The delicate balance between minimal regulatory transparent governance and increasing the scope and role of private sector in all activities of the nation is one of the cornerstones of efficient implementation of any 21st century national strategy. A shift from

The domestic dynamic is equally important for a Grand Strategy. No grand strategy can preclude domestic policies

the traditional nanny state to a more facilitator role is an idea whose time has come in modern-nation states. The role of private sector in traditionally state-dominated public goods like national security, public education, tax reforms, infrastructure, energy and health has fundamentally changed. In many cases, they are drivers of innovations and creative thinking. The Indian state too would need to adjust to these new realities while still retaining the primary role in regulation, monopolistic and distributive functions. Indian military capacities have to be a force multiplier for achievement of the broader politico-economic goals. Role of military attache' in our diplomatic missions needs a rethink in this regard. On the other hand, the responsibility of the private sector in servicing the demands of national security has to be solely driven and led by the operational conditions of the armed forces. Thus this delicate balance between stakeholders requires certain broadly agreed principles for effective national action. India is a knowledge-driven economy so our Global partnerships will have to be chosen in light of their impact on our core strategic concerns- technology and capital for our defence and entrepreneurs, education and access for our citizens, markets and institutional representation for fair and balanced international trade, diversification of our energy profile and reduction of our potentially crippling dependence on energy imports, security of global public goods and increased mandate in political institutions of power e.g. the UNSC. These questions are a prerogative of the leadership and too complex for a simplistic prescription. But a broad articulation of the criteria, reasoning and policy that the leadership chooses to resolve these is indispensable for the organisational consistency and efficiency of any national initiative. A simple wrong step/tactic/policy is often the manifestation of a flawed Grand Strategy.

A nation while thinking of grand strategy has to differentiate between short-term tactics from the broader strategic goals. Strategy is about knowing where you want to get to with means at your disposal. An interesting analogy is that of a student taking martial arts lessons. He gets into the lessons to learn how to defend himself. During the course of the lessons however he forgets to connect the short term tactics to the long term strategy merely proceeding mechanically with what he is taught without

thinking as to what works for him. There is a clear mismatch in the sense that his learning of those tactics were not shaped by his strategic thought which was to learn to defend himself. This process essentially results in him becoming a competent wushu demonstrator of martial arts but an incompetent fighter. This is a common problem in international politics and military affairs. Tactics are used devoid of strategy. Their short term applicability masquerades their broader utility. A good way of avoiding this is by framing a grand strategic vision. This ensures screening your tactics with your strategic goals.

Let's invoke an example. China has declared a strategy of 'peaceful development'. For the foreseeable future this can be regarded as the grand strategy of China. For this strategy to work, China needs a peaceful periphery and increased interaction with the world economy to fulfil its goals of economic growth. For the fruition of this strategy, China has looked to avoid direct confrontation with the US in the pacific but looked to exercise enough spheres of influence in its neighbouring countries in the classic sense of Sun Tzu's strategy game of 'shi'. It has looked to enhance its neighbours' dependence on Chinese trade while increasingly investing the surplus in US government treasury bonds to increase interdependence. China has invested in military technologies but hasn't demonstrated excessive force even in sensitive areas like South China Sea and Tibet. China's tactics are currently in line with its broader strategy. It is waiting for a strategic opportunity in terms of a systemic shift or event in international politics after which it can choose to change or continue this grand strategy and tactics accordingly. Till then all her tactics will be governed by this broader 'peaceful development' stratagem. Tactics in violation of this strategy might weaken china's broader goals which are political stability and few more decades of uninterrupted double digit growth. This time of stability will also help the communist party to adequately adapt politically to the internal pressures and external opportunities of the new confident China that will emerge in a few decades time. China's selection of these tactics is an insurance against the unpredictability of intentions which China's adversaries cannot rely on since intentions can change. They need

Strategy, in both theory and practice, is permeated and shaped by three set of forces: Logistical, Psychological (particularly centring on the psychological aspects of command), and bureaucratic

reassurance to ease their security dilemmas. China is thus framing her tactics in line with the strategy she has envisaged.

MILITARY DIMENSION

Military strategy and its implications on force structure is another pillar of grand strategy. Some might even say it's the foundation. Traditional exponents of the subject have dealt with grand strategy as almost exclusively in Military terms. Others however treat it as one of the many important components. Either way it is central to a nation's grand strategy since security is an indispensable public good. Also since the state is still the primary unit of an international system with no governing authority to impose a social contract between nations, military power has become the underlying currency of international politics. The US naval war college has done extensive analysis on the subject and they have come up with some fundamentals of military strategy. The first is that strategy, in both theory and practice, is permeated and shaped by three set of forces: Logistical, Psychological (particularly centring on the psychological aspects of command), and bureaucratic. The second observation is more Clausewitzian which is that while application of strategic principles to particular situations is infinitely variable and at times subtle, the fundamentals of strategy are relatively few and simple. This means that it is feasible to create a concise but carefully structured statement of these fundamentals that can be drawn on as a conceptual aid, or template, to help craft strategic approaches as current strategic conditions mutate and fundamentally new situations arise.

Strategy⁶ is defined as the comprehensive direction of power to control situations and areas to attain broad objectives. There is a further analysis of this definition:

6. Scott A. Boorman, "Fundamentals Of Strategy : The Legacy of Henry Eccles, *Naval War College Review*, Spring 2009, Vol. 62, No.2, pp. 92-96, pp. 98-99, p.103.

- Comprehensive: Control of the external field of action, whose central focus is the adversary or adversaries (but may also be expanded to include allies and neutrals) and Control of the internal field of action, whose focus is the roots of power on which the strategist draws (e.g. political, public opinion, producer logistics, means of internal organisational control, industrial base and perhaps even extending to family and social network of a leader or commander).
In strategic environments where certain types of power are “off the table” at a given time, a basic challenge for strategists is developing intuition to identify when a particular type of power has changed from unusable to usable
- Direction: involves the standard sorts of ‘she/he thinks I think she/he thinks’ calculations widely associated with thinking strategically. It employs the use of both logistical calculations and active use of diplomatic skill.
- Power here has to be given a broad scope: military and civilian. In strategic environments where certain types of power are “off the table” at a given time, a basic challenge for strategists is developing intuition to identify when a particular type of power has changed from unusable to usable. The dynamics here, centring on qualitative change in a conflict situation, are frequently more psychological and at times bureaucratic than technical – with a concomitant potential for strategic surprise, such as when adversaries come from very different cultures. Schelling elaborates on this point by warning that sophistication can sometime suppress sound intuition which should be restored. In this definition of power the military strategist has to exercise control on political, economic, demographic and military factors.
- Objectives in the definition, refers to actual, not declared strategy. In a world where PR is an important function, it is easy for strategists to let their declared strategies edit their real goals due to psychological and bureaucratic forces. This is called goal displacement. Because quantification in high-level strategic matters commonly has limited

meaning or utility, as a practical matter the analysis of objectives should involve devising a hierarchy of qualitative goals conjoined with a timetable for their accomplishment.

Furthermore logistics exist to serve strategy never the other way around. Logistics analysis must always accompany the strategic imagination. The strategist needs to craft a strategy to be in harmony with the fundamental values of the larger collective (nation, party, faction or other) that the strategist serves. Such values may include that collective's concepts of victory and defeat, its affinity with certain weapons or tools of conflict, and its affinity with certain overall styles of conflict (e.g. short war versus protracted war, positional versus mobile versus guerrilla warfare.) Such analysis becomes of paramount importance to seize the strategic opportunity when the adversary's own action starts to veer away from his fundamental values. Liddell Hart termed this as the "the other side of the hill" – i.e. the situation of the adversary.

As mentioned earlier, Flexibility is often sought during this analysis. In some contexts, Strategy certainly demands decisive action or some extremely carefully reasoned form of irreversible commitment. Yet the fog of war, fluidity of long term situations and opaqueness of complex social structure and process beget strategic flexibility. The dictum goes like this: producing strategic flexibility requires many ingredients but inducing strategic inflexibility may need only one. In light of this analysis, Grand Strategy is interpreted as a special case where either (1) control is sought with a distinctively deep time horizon or (2) the search for such control has distinctively combinational aspects among diplomatic, psychological, economic and purely military matters.⁷

Carl Von Clausewitz was the pioneering military strategist working on grand strategy. He emphasised certain principles which have been ingrained in the theory of strategy. His work, 'On War' is a seminal classic. He emphasised that there is no such thing as absolute war. War should always have a political purpose. War is a method by which states interact with each other. It is the continuation of policy by other means. That is why the total defeat or national humiliation of Japan and Germany in the Second

7. Ibid.

World War would have been a mistake because there would be a resultant power vacuum. He postulates that violence is at the centre of war but states need not produce disproportionate violence but just enough to achieve the desired objective. The purpose of military operation is just to produce enough violence to make a psychological impact on the adversary to make him stop. In other words, there has to be proportionality. He emphasised the virtues of defence over offense reasoning that every offensive in time exhausts itself to a culminating point - 'a centre of gravity' after which minimal application of opposing force (not necessarily war) could destabilise it. A good example would be George Kennan's prognosis that a small push applied with carefully chosen means could reverse Stalin's momentum in the post-war world- this could have been achieved with no fighting or violence at all. This prognosis ultimately led to the use of Marshall Plan to buttress American gains in post-war Europe and East Asia without any violence at all. In reality, the objective was achieved with just the announcement speech of the Marshall plan showing the dependable consistency of the seminal Clausewitzian logic. Clausewitz went further and qualified military strategy into a more complex and variable interaction between what he termed as 'the trinity of purpose, hostility and chance.' These principles have been distilled into modern war doctrines. Where grand strategy weighs in this concept is that it articulates that larger politico-economic purpose to influence all three factors in the ultimate use, rejection and proportionality of force.

GRAND STRATEGY IN CONTEMPORARY WORLD

The insistence on military strategy is crucial to the grand strategic approach even though the likelihood of conflict has greatly diminished in the nuclear world order. This is because Military power is still the underlying currency of power as nation states are still the primary units of interaction. I say underlying because in my opinion, despite globalisation, non-traditional security threats, and economic interdependence having an enormous impact in the direction of diplomacy and multilateralism; nationalism, security and sovereignty remain deeply embedded. Hence the reliance on force is apparent. This is because Force is 'fungible'. It can be used in

a variety of tasks and purposes both military and non-military. In fact, even the phenomenon of humanitarian intervention and R2P essentially negatively reinforces the deep roots of sovereignty- the logic being that there is something to intervene against and thus the term 'intervention' itself accepts the pervasiveness of 'sovereignty'. Although the nature of power politics has transformed dramatically, national interest retains a priority over values and relative gains of interdependence. Following from this argument, the conception of the state-centric international system is still relevant and classical realism with an insistence on balance of power and national interest with limited coordination of values remains a reliable construct for international politics. A military strategist's job is to strategise the specifics in coordination with this broad construct.

It would be worthwhile to mention at this point that theory has limitations. It cannot plan for unfavourable contingencies and real-time changes, a grand strategy on the other hand is needed to fill this analytical gap, and it helps you interpret real-time events in light of your larger strategic goals and options. For example, discounting a UN resolution as reactionary might be a reflection of your theoretical bias however sound the assumptions but as a strategist you might have to embrace or ignore it depending on your larger strategic goals. For a third world country and its leadership, these goals and hence the ensuing reaction is completely different compared to a great power although the latter might still choose to support it to uphold a particular value which serves a particular national interest. Therefore, strategy gives u theoretical nuance (or theoretical inconsistency whatever your interlocutor may choose to call it) by linking it with predictive outcomes rather than descriptive analysis.

There is another contemporary aspect in exercise and articulation of Grand strategy - the impact of political system. It is often said that the linear-logic does not work well in conflict situations because there is no effective contract enforcement in international politics like there is in the domestic sphere. But democracies function on precisely the same linear logic when framing their goals and responses. The changing leadership and various interest groups in a democracy often fail in sustained adherence to a long term Grand strategy.

This is partially true but we cannot preclude the inherent resilience of democracies to implement long term grand strategies. The legitimacy of leadership is more important than longevity. Containment succeeded because of sustained adherence by successive administrations of various political hues and ideological inclinations. In a one-party system, The Chinese 'peaceful development' strategy has been consistently invoked in the post-Mao period tacitly acquiesced to if not out rightly endorsed by the PLA. Bi-partisanship and sustainability are thus important aspects. A grand strategy is often based

on a long-term vision hence it strives to subsume short term distortions which change of leadership, crises, and operational problems tend to cause. A distinction has to be made between these and a national emergency or a revolution or some systemic change in international politics or relative capabilities which would significantly alter a nation's grand strategy. This is easier said than done. Democracies work in cycles with substantial transition periods in between. Leaders often attribute the mistakes of a policy to their predecessors. In multi-party democracies this problem is accentuated by coalitions and decentralisation problems. The genetic make-up of a political system should be examined to overcome this problem and necessary changes made. Proportional representation, abolishing demagogue acts like gerrymandering or caste-isation of constituencies and a legislative responsibility of every leadership to at least release an NSS document will certainly be steps in the right direction.

The challenges and opportunities available to a modern state in the competitive international system require quick reaction and pro-active policy making. A stagnant state is a regressive state in a competitive system. The demos should be sensitised to think strategically and certain decisions have to be eschewed in the interest of a grand strategy. Caution and Restraint while remaining intrinsic, cannot be used as a doctrinal excuse for inaction. Following from this, the Indian definition of the concept

Linear-logic does not work well in conflict situations because there is no effective contract enforcement in international politics like there is in the domestic sphere

The challenges and opportunities available to a modern state in the competitive international system require quick reaction and proactive policy making

of strategic autonomy therefore has caveats. Strategic autonomy cannot be put forward as a strategy per se because essentially all nations in the world are looking for strategic autonomy all the time. Independent decision making is a basic corollary of the principle of sovereignty. Nations need to incentivise non-interference and disincentivise interference through concrete military and politico-economic strategies. Autonomy is not a panacea in itself. Strategy goes beyond it and lies in the exercise of that autonomy through tangible policies and postures in a carefully calibrated incremental pursuit of a grand strategy.

Where can we find examples of effective grand strategies? For the sources of research in Grand Strategy one can invoke history because as the cold war strategist John Lewis Gaddis⁸ puts it: We use the History because they are transferrable, the future is obviously unpredictable and the present is ephemeral. From Thucydides to the Byzantine, from Chanakya to Machiavelli, from Clausewitz to Kennan, From Wilson to Bush, from Bismarck to Kissinger, from Mao to Deng, from Palmerston to Churchill, from Nehru to Obama, history is rich with different conceptions of grand strategy providing us with rich bodywork with which to research on this subject. The paper is one such attempt in that direction.

8. Professor John Lewis Gaddis, Yale University, Lecture, "*George Kennan and American Grand Strategy during the Cold War*", Naval War College, October 3rd 201. Available at: www.youtube.com/watch?v=TsRV5Tz5Rmc

DRAGON'S INFORMATION WARFARE: IMPLICATIONS FOR INDIA

RAJ MONGIA

INTRODUCTION

In recent years, China has demonstrated an intense fascination with information warfare. The potential advances in Chinese IW doctrine and capabilities have direct implications for Indian national security. The ability of China to conduct information warfare against India in peacetime, confrontation or conflict could pose severe challenges to Indian defence apparatus.

Information warfare is comprised of operations directed against information in any form, transmitted over any media, including operations against information content, its supporting systems and software, the physical hardware device that stores the data or instructions, and also human practices and perceptions. Sun Tzu said:

"... attaining one hundred victories in one hundred battles is not the pinnacle of excellence. Subjugating the enemy's army without fighting is the true pinnacle of excellence." Mao Tse Tung further elaborates "To achieve victory we must as far as possible make the enemy blind and deaf by sealing his eyes and ears and drive his commanders to distraction by creating confusion in their minds."

Wing Commander **Raj Mongia** is a serving IAF officer and a Research Fellow at the Centre for Air Power Studies, New Delhi.

The term Information Warfare (IW) is primarily a concept involving the use and management of information technology in pursuit of a competitive advantage over an opponent. Information warfare may involve collection of tactical information, assurance(s) that one's own information is valid, spreading of propaganda or disinformation to demoralise or manipulate the enemy and the public, undermining the quality of opposing force information and denial. It is closely linked to psychological warfare.

People's Liberation Army (The PLA) has been quite aware of continuous changes in geo-political and geo-strategic contexts, as well as the changing nature of warfare. It has fashioned its responses by evolving appropriate military doctrines and strategies to meet future threats and challenges. Thus, modern conditions' and thereafter from 'limited local war' to 'limited war under high tech China's military doctrine' has over the years undergone a transition from people's war to 'people's war under informationalised conditions'.

The concept of limited war under high tech conditions was formulated as a response to 'Operation Desert Storm' and the lessons learnt from it, especially in the areas of information technologies and knowledge-based warfare. China's November 2004 White Paper on National Defence outlines the acceleration of a Revolution in Military Affairs (RMA) with Chinese characteristics by building an 'informationalised' force. 'Limited war under high tech conditions', which remained in force for over 10 years, has now been replaced by 'local war under informationalised conditions'' after studying the lessons of the Second Gulf War, 'Operation Enduring Freedom' in Afghanistan and 'Operation Allied Force' in Kosovo. The White Paper mentioned the main objective of PLA as:

"The PLA, aiming at building an informationalised force and winning an information war, deepens its reforms, dedicates itself to innovation, improves its quality and actively pushes forward the RMA with Chinese characteristics with informationalisation at its core."

Though the term 'informationalisation' has not been clearly defined, what can be inferred is that it covers a wide ambit and includes intelligence based

weaponry besides all elements of command, control, computer, communications, intelligence, surveillance and reconnaissance (C4ISR) and traditional components of information warfare. While informationalisation is only a sub-set of the RMA, with Chinese characteristics, information warfare is a sub-set of informationalisation. But at the national and strategic levels, it transcends the military aspects and becomes an important tool for shaping perceptions and belief systems of adversaries and competitors on a higher plane. The 2004 White Paper, among other things, makes certain observations and places emphasis and focus on:

- Means of information operations and automated command systems, information measures, sound organisational structures and advance weaponry and equipment, which possesses an integrated and complete array of information support and operational means.
- Promotion of informationalisation of missiles and equipment, and improvements in communications and reconnaissance capabilities, especially of the. Second Artillery Force.
- A series of projects on military information systems have been completed and information technology elements have been incorporated into battle systems and development support to military information structure has been guaranteed.
- Development of new military and operational theories and increased emphasis on training for information warfare.
- Integration of military and civil resources for efficient information mobilisation mechanisms for exploiting synergies.

The concept of limited war under high tech conditions was formulated as a response to ‘Operation Desert Storm’ and the lessons learnt from it, especially in the areas of information technologies and knowledge-based warfare

IMPORTANCE OF INFORMATION WARFARE

Given the above context, one can get an insight into evolution of Chinese theories and concepts on Information Warfare (IW). As with all its military theories and

Informationalisation is only a sub-set of the RMA, with Chinese characteristics, information warfare is a sub-set of informationalisation

strategic perspectives, Chinese traditional wisdom and strategic thought is applied to all new concepts and precepts originating from the US, Russia or elsewhere. The first wave of Chinese writings on IW appeared in the mid-1990s following the success of US information technologies in the first Gulf War of 1991. Though this war was a defining event for all militaries of the world, its impact on the PLA was greater because of the aspirations of the Chinese political and military leadership towards acquiring comprehensive national strength. The PLA was first off the block in developing theories of IW and adapting Western concepts to suit local conditions. A PLA General, writing on challenges and importance of IW, observed:

“In near future, Information warfare will control the form and future of war. We recognise this developmental trend of information warfare and see it as a driving force in China’s military and combat readiness. This trend will be highly critical to achieve victory in future wars.”

The General further emphasised that China must use a practical combination of IW and Maoist and Marxist military thought to guide IW issues under military construction. The military must study ways of using inferior equipment to achieve victory over the enemy’s superior equipment. He advocated study on how to conduct ‘People’s war in IW domain’. The underlying theme of Chinese concepts are based on IW, and on exploiting own strengths. The other fundamental assumption is that superior tactics can compensate for inferior technology. has been emphasis on devising ways and means to attack an enemy’s weaknesses and vulnerabilities

PEOPLE’S WARFARE IN INFORMATION WARFARE CONTEXT

According to some Chinese military analysts, because of the increasing relevance of information technology (IT) to people’s lives, individuals who take part in IW are not all soldiers and that anybody who understands

computers may become a fighter. IW is inexpensive as the targeted party can be delivered a paralysing blow through the net and it may be difficult for the latter to discern where the attack originated. Large amount of useless information can be created to block or stop the functioning of an adversary's information system. Thus, a People's War in context of IW can be carried out by hundreds of millions of people, using open-type modern information systems. Even political mobilisation for war can be achieved via the internet, by sending patriotic e-mail messages and by setting up databases for education. This finds further support from another Chinese author, who observes that:

“even as ... government mobilized troops, the numbers and roles of traditional warriors will be sharply less than those of technical experts...since thousand of personal computers can be linked up to perform a common operation, to perform many tasks in in place of a large-scale military computer, an IW victory will very likely be determined by which country can mobilize the most computer experts and part-time fans... That will be a real People's War.”

Preparing for people's war is a recurring theme in Chinese writing, as IW will be carried out by the PLA and society as a whole. This concept has found practical expression in turning some of the 1.5 million reserve forces into mini-IW regiments. The People's Armed Forces Department (PAFD) has reportedly organised militia/ reserve IW regiments at district levels in many provinces. For instance, in Echeng district of Hubei province, the PAFD has a network warfare battalion as well as electronic warfare, intelligence and psychological warfare battalions, and also a training base for IW activities. The PAFD has also carried out 'Informaticised People's Warfare Network Simulation Exercise'. A version of this concept was also put into practice following the bombing of the Chinese embassy in Belgrade on May 8, 1999, during 'Operation Allied Force'. The Chinese hacked a number of US political, military and diplomatic web sites, and also carried out a network battle by mobilising thousands of net users for sending emails and viruses. This caused servers to crash, paralysing a large number of web sites.

CYBER WARFARE

Concerns about China's net force were heightened after the aforementioned attacks on US computer systems and after the Chinese militia carried out IW exercises, which included India, the US, Taiwan and Japan as target countries. The aim of such training was to disrupt critical infrastructure like banking, power supply and telecommunication networks in the target country as part of China's strategy of asymmetric approach to warfare. In the cyber domain, the Chinese have adopted three methods for targeting such networks; the first is the use of e-mails for planting viruses; then phishing and lastly, the introduction of 'intelligent trojans' and 'vacuum trojans'. Diverse routes of planting trojans and viruses have been used to attack critical PCs, which in turn send out files or cause malfunction. Hackers' tools are becoming more robotic and simple; for instance, a vacuum trojan will extract information from a pen drive automatically when connected to a USB port. It is also believed that the next step could be planting the targeted sites with the more difficult to detect fake data or partially fake data.

In Nanjing, the PLA has developed more than 250 trojans and similar tools. Here, it needs to be remembered that foreign companies like Network Solutions, were made to hand over 300 computer viruses by the Ministry of Public Security's lab in an effort to speed up the certification of antivirus products. Further, the Chinese Academy of Sciences, which provides suggestions about national information security policy and law, has established the State Lab for Information Security. The lab has 'National Attack Project' as one of its research programmes. Also, select professionals have been inducted into militia organisations to boost combat capabilities in future wars. Thus, China has been paying much attention to offensive strategies in cyberspace even as it concentrates on defensive IW.

DEFINITION AND GOALS OF INFORMATION WARFARE

The Chinese understanding of IW, which was initially based on western concepts, has increasingly moved towards evolving its own orientation. Chinese experts believe that IW's essence is the sum of information capabilities capable of breaking the will to resist by attacking an enemy's

cognitive understanding and convictions, forcing it to give up all resistance and terminate the war. The goal is to “force enemy to regard their goal as our goal, to force the opponent to give up the will to resist and end confrontation and stop fight by attacking enemy’s perceptions and belief via information energy.” Xie Guang, the then Vice Minister of Science and Technology and Industry for National Defence, defined IW in December 1999 thus: “IW in military sense means overall use of various types (of) information technologies, equipment and systems, particularly his command systems, to

The goal is to “force enemy to regard their goal as our goal, to force the opponent to give up the will to resist and end confrontation and stop fight by attacking enemy’s perceptions and belief via information energy”

shake determination of enemy’s policy makers and at the same time, the use of all the means possible to ensure that that one’s own systems are not damaged or disturbed.” This definition apparently includes the aspects of IW’s goals at the larger national level. A further elaboration was done by two senior PLA colonels, who described IW as consisting of five major elements and two general areas. The five elements are:

- Substantive destruction, the use of hard weapons to destroy enemy headquarters, command posts, and command and control (C2) information centres.
- Electronic warfare, the use of electronic means of jamming or the use of anti-radiation [electromagnetic] weapons to attack enemy information and intelligence collection systems such as communications and radar.
- Operational secrecy, the use of all means to maintain secrecy and keep the enemy from collecting intelligence on our operations.
- Psychological warfare, the use of TV, radio, and leaflets to undermine the enemy’s military morale.

The two general areas are information protection (defence) and information attack (offence). Information defence means preventing the destruction of one’s own information systems, ensuring that these systems

can perform their normal functions. In future wars, key information and information systems will become “combat priorities”, the key targets of enemy attack. It also includes many other manifestations of IW like computer virus warfare, precision warfare and stealth warfare, all dependent in some manner on information and software programmes.

INFORMATION OPERATIONS

Information Operations (IO) are specific operations and are considered to be at the core of IW, in the same manner as IW is considered to be at the core of informationalisation. In fact, IO is a manifestation of IW on the battlefield. It can be both of the defensive and offensive types, and can be conducted at the strategic, operational, campaign and tactical levels at times of peace, wars and crises. Principles of IO have been defined by Chinese military authors to include centralised command, decentralised control (multi-level power delegation), multi-dimension inspection and testing, timely decision-making and integration of military and civil actions with focus on key links. Major General Dai Qingmin, Director of PLA's General Staff responsible for IW and IO (and also ex-Commander of PLA's IW Centre in Wuhan) observes that integrated and joint information operations give more scope and purpose to people's war. (In fact, jointness and integration is a major theme of the 2004 White Paper). He defines IO as a series of operations with an informationalised environment as the basic battlefield condition, with military information and information systems as the direct operational targets and electronic warfare (EW) and computer networks as the principal form. He has outlined various IO strategies because, as mentioned earlier, according to the traditional Chinese approach strategies can compensate for inferior equipment and technologies and, in the case of IO, it may also compensate for gaps in information or poor information about the enemy. Some of the IO strategies are:

- Jamming or sabotaging an enemy's information or information system.
- Sabotaging an enemy's overall information operational structure.
- Weakening an enemy's information fighting capacity.

- Dispersing enemy forces, arms and fires while concentrating own forces, arms and fire.
- Confusing or diverting an enemy and creating an excellent combat opportunity for on self.
- Diverting an enemy's reconnaissance attempt and making sufficient preparations for it.
- Giving the enemy a false impression and launching surprise information attack on him at the same time.
- Blinding or deafening an enemy with false impressions.
- Confusing an enemy or disrupting his thinking.
- Making an enemy believe that what is true is false and what is false is true.
- Causing an enemy to make a wrong judgement or take wrong action.

In the IW exercises conducted by PAFD, 10 methods of IO were specified and these can be viewed as tactics in the electronic battlefield. These are:

- Planting information mines
- Conducting information reconnaissance
- Changing network data
- Releasing information bombs
- Dumping information garbage
- Disseminating propaganda
- Applying information deception
- Releasing clone information
- Organising information defence
- Establishing network spy stations

COMPUTER NETWORK OPERATIONS

In Chinese writings on Information Warfare, networking has also been the focus of discussions. The recent emphasis on jointness and integration apply equally to integrating various military networks. A critique by Timothy Thomas notes that the Chinese feel it necessary to prepare for a "network people's war". Computer network warfare has been included by Dai Qing

INEW lays stress on coordinating and integrating all aspects of C4ISR and weapon platforms and weapon systems to produce the desired effects at the target end

as one of the six forms of IW (i.e. operational security, military deception, psychological warfare, electronic warfare, computer network warfare and physical destruction). Though there is no evidence of a formal Chinese doctrine, Chinese theorists have coined the term "Integrated Network Electronic Warfare" (INEW) and this has also been referred to by Timothy Thomas as a half cousin, given its similarities and points of divergences to the US approach.

INEW has been described as a series of combat operations that integrate electronic warfare and computer network warfare measures to disrupt the normal operation of an enemy's battlefield systems while protecting one's own with the objective of attaining information superiority. The essence of computer network warfare (CNW) is "to disrupt layers in which information is processed, by seizing and maintaining control of network space". EW is targeted at networked information systems and informationalised weapon systems in order to increase combat effectiveness. According to Dai, INEW is necessary for system to system confrontation on the informationalised battlefield, as systems are centres of gravity. Any disruption in system will lead to disconnect between the people and weapons. Thus, INEW lays stress on coordinating and integrating all aspects of C4ISR and weapon platforms and weapon systems to produce the desired effects at the target end. The effectiveness of weapon platforms and network systems is directly proportional to its levels of integration. As in other spheres, integration produces a combat capability greater than the sum of its parts and, this is true for information operations as well.

China's computer network operations (CNO) comprise network attacks, defence, and exploitation. According to the Pentagon's Annual Report for 2005 to the Congress on China's military power, the PLA views CNO as critical to seize the initiative and "electromagnetic dominance" early in a conflict, and as a force multiplier. This concept outlines the integrated use of electronic warfare, CNO and limited physical strikes against key C4ISR

nodes to disrupt an enemy's battlefield network information systems. It is believed that the PLA has established information warfare units to develop viruses to attack enemy computer systems and networks, and tactics to protect friendly computer systems and networks. The PLA has increased the role of CNO in its military exercises. Although initial training efforts focused on increasing the PLA's proficiency in defensive measures, recent exercises have incorporated offensive operations, primarily as first strikes against enemy networks.

Computer network attack is the most effective means for a weak adversary to fight a strong one

The main area of weakness that the Chinese spy, especially with regard to US forces, is the deployment phase. US forces are largely dependent upon computer and communication systems, both military and nonmilitary, and the particularly weak links in the logistics network systems make them susceptible to computer network attacks. Logistics network systems may be relatively easy to penetrate compared to other C4 systems though it will be more useful to penetrate command and information links. However, the priority of Chinese CNW seems to be to prevent the force from deploying at the first place and thereafter breaking the linkages between decision-makers and weapon platforms. This approach rhymes with the oft-stated Chinese strategy of attacking weaknesses and avoiding strengths of the enemy. As observed by James Mulvenon, Chinese strategists theorise that:

- Computer network attack is the most effective means for a weak adversary to fight a strong one.
- It can be used as a means to deter the enemy.
- It has longer range than the conventional power projection assets, as long distance surveillance and precise powerful and long distance attacks are available to the military.

PSYCHOLOGICAL OPERATIONS AND INFORMATION WARFARE

Another important component of information Warfare with Chinese characteristics is psychological warfare. Chinese doctrine has traditionally

focused more attention on the psychological dimensions of IW, including deception, though of late they have also been paying equal, if not more, attention to the technological dimensions. The target in psychological operations is always the people and decision-makers, so that their will and perceptions are attacked to alter their beliefs, goals and behaviour. This is aimed at both military and civil components of an adversary's populace. Psychological operations comprise of manipulation of media to support military efforts and include conventional methods of propaganda like distribution of leaflets, radio and TV broadcasts, and other means of communication. Like most of the components of IW, psychological operations are a continuum of actions in peacetime, crisis time and war time.

In August 2005, the PLA conducted a joint exercise, involving not only all its services but also troops from Russia. The exercise involved distribution of leaflets over the opponent, electronic warfare to confuse incoming missiles and adoption of electronic counter measures. These exercises involved the use of live missiles and ammunition, and showcased precision warfare capabilities as well as the latest military equipment. These exercises could also be said to have had a psychological dimension for deterring Taiwan or those aiding it in its political objectives. Here, it can be argued that the Chinese appear to have taken a leaf out of the US forces' tom-tomming of the awesome power of their arsenal and military capabilities before the start of 'Operation Iraqi Freedom', which had the effect of lowering the morale of the Iraqi military. The US forces also air dropped over 31 million leaflets for propaganda purposes besides physically attacking Iraqi forces' command and control networks based on fibre optic lines and radio and computer servers. US forces had been issued cyber-guidance as early as February 2003 for operations in Iraq. The PLA has thus been quick to absorb lessons on IW from 'Operation Iraqi Freedom'.

The Chinese also observed the power of media when CNN's broadcast of a US soldier's body being dragged through the streets of Mogadishu transformed perceptions of victory into defeat. Authors of the Chinese book titled *Unrestricted Warfare* reflected on the incident thus: Did CNN's

broadcast of an exposed corpse of a US soldier in the streets of Mogadishu shake the determination of the Americans to act as the world's policeman, thereby altering the world's strategic situation? And should an assessment of wartime actions look at the means or the results?

PLA'S IW/EW CAPABILITIES

The 2004 White Paper shows that the Chinese military has understood that there is a large and expanding technology gap between it and modern militaries, especially that of the US. China's leaders, including President Hu Jintao, have ordered the PLA to pursue "leap ahead" technologies and "informationalised" capabilities to increase weapons' mobility, firepower and precision. This perspective applies to IW also.

The Central Military Commission's (CMC) Third or Technical Department of General Service Headquarters is responsible for strategic SIGINT and has established a number of monitoring stations to intercept signals from countries like India, Taiwan, Japan, South Korea and others. The PRC also established a Fourth Armed Forces Department in 1990 to look after offensive and defensive IW activities. It has also built "an information warfare simulation centre" for training its corps of network warriors. The centre uses high technology simulation skills and equipment to simulate information warfare and its environment. The Fourth Department has special detachments and units that manage and direct SIGINT and EW operations for the PLA at all levels and includes operations of the Air Force and the Navy.

The PRC has completed one million km of fibre optics line and communication infrastructure called "Eight Horizontal Grids and Eight Vertical Grids" supported by satellite, ground mobile receiving stations and ground to air data links. With technologies obtained from Western countries and by exploiting its booming commercial IT and telecommunications sector, it has improved the quality of its military programmes. The PLA has acquired and deployed a wide variety of air, sea and land-based intelligence, surveillance and reconnaissance (ISR) systems to enhance its ability to detect monitor and target military activities in Asia and West

Both military and civil sectors are actively exploring IW concepts which could lead to developing a corps of network warriors to defend

Pacific Ocean. Some of the latest programmes include electro-optics, synthetic aperture radar, over the horizon radars, and surveillance systems that can detect stealth aircraft.

EW is a key element in the PLA's 'Three Attacks and Three Defences' strategy (attack stealth aircraft, cruise missiles and helicopters; defend against precision strikes, electronic warfare, and enemy reconnaissance) to meet the requirements

of 'local war under high tech conditions' which has now progressed to 'local war under informationalised conditions'. Both military and civil sectors are actively exploring IW concepts which could lead to developing a corps of network warriors to defend China's telecommunication, command and information networks while uncovering vulnerabilities of adversaries' networks.

At the national level, China has a C3I system based on fibre optic cables, satellite communications, micro-wave links, tropo-scatter communications and automated command and control systems. The PLA has both secured and non-secured telecommunications and has an army wide data communication network and integrated field operations communication system. Its WAN is capable of supporting peacetime operations within Chinese borders and limited pre-planned operations along China's periphery but is inadequate for large-scale joint operations.

The Chinese Army has a family of battlefield ELINT systems like DZ 9002 that detect, intercept, analyse and record an adversary's signal emissions. DZ 9001 has been developed both for defensive and offensive electronic counter measures (ECM). DZ 9300 is a man-packed radar reconnaissance system meant for special operations forces and rapid reaction forces. A bodyguard laser countermeasures system has also been developed to counter precision-guided munitions guided by laser emissions. There are also a variety of jamming systems with the ground forces.

The PLA Air Force is developing capabilities in airborne warning and control systems (AWACS), airborne early warning, and ECM aircraft and

UAVs. Shaanxi Y-8 has been designed for special EW, ELINT and ECM missions. This aircraft was first observed in operation in the summer of 2004 and it is believed that some of its equipment may be from the US Navy's EP-3 ELINT aircraft that made an emergency landing in Hainan in April 2001. Another version of the Y-8 aircraft is 'Balance Beam' airborne early warning aircraft meant for tactical ISR, EW and ELINT missions. It made its maiden flight in 2001 and its finalised version Y-8 F600 flew in January 2005. The PLA Air Force is planning for 4-6 AWACS and has about 20 other dedicated ELINT aircraft like HD-5, TU-154M and HZ-6. HD-5, an older version, is being replaced by HZ-6 which has improved capabilities. UAV's configured for ELINT and EW missions are also in use. In July 2002, the PLA inducted the Israeli anti-radar hunter killer HARPY UAV.

The Chinese Navy also has over a dozen ships and several trawlers for various electronic warfare missions. Four Yuan Wang and Shiyan class ships monitor space events and are capable of collecting and monitoring missile and satellite telemetry data and communications. Chinese industry has developed three types of systems, based on Soviet-era systems, which have been further upgraded and modernised.

Space is another area where the Chinese have been making rapid advances, especially in the field of ISR and anti-satellite technologies. China considers space as a 'commanding height' and it plans to control space and win the information war after having built up an informationalised PLA. In 2003, the PLA had six dual-use dedicated satellites for military purposes. In 2004, China placed 10 satellites into orbit and has a similar schedule through 2006. It hopes to have more than 100 satellites in orbit by 2010, and launch an additional 100 satellites by 2020. In the next decade, Beijing will most likely field radar, ocean surveillance, and improved film-based photo-reconnaissance satellites. China will eventually deploy advanced imagery, reconnaissance, and Earth resource systems with military applications. China's ZY-2 payloads have digital imagery reconnaissance capabilities and have worldwide coverage. Beijing also tested new film-based imagery satellites and small digital imagery satellites in 2003 and 2004. It is also developing its own GPS navigation system based on the Beidou series of

Attaining information superiority has become one of the most important objectives to be achieved in the era of knowledge age warfare

navigational satellites. The PLA possesses anti-GPS jammers obtained from Russia, which however may not be very effective against the NAVSAT satellite system of the US.

China is also developing electronic intelligence (ELINT) and signals intelligence (SIGINT) reconnaissance satellites. These digital data systems will be able to transmit directly to ground sites, and China may be developing a system of data relay satellites to support global coverage. Furthermore, Beijing has acquired mobile data reception equipment that can support more rapid data transmission to deployed military forces and units. China is developing micro satellites for remote sensing as well as for putting into place networks of electro-optical and radar satellites. In April 2004, Beijing launched a micro satellite with a probable imagery mission. China is also conducting research to develop ground-based laser ASAT Weapons. All these capabilities will contribute to China's prowess in the field of information warfare.

IMPLICATIONS FOR INDIA

Attaining information superiority has become one of the most important objectives to be achieved in the era of knowledge age warfare. The concept of information superiority is somewhat analogous to similar concepts of air, sea or space superiority. This is because proper use of information is as lethal as other kinds of power. Further, the concept of information superiority leads us to attainment of decision superiority. Information operations are increasingly being considered as important as sea, land and air operations. Information operations can vary from physical destruction to psychological operations to computer network defence. Well conducted joint information operations with new RMA technologies, improved organisations and doctrine will greatly contribute to a successful and decisive outcome.

It is in this context that a Defence Information Warfare Agency (DIWA) under the Integrated Defence Staff Headquarters has been formed to

coordinate efforts of the three services and certain other agencies to handle all aspects of information warfare. The Indian concepts of IW are generally based on Western concepts and according to the 2004 Army Doctrine, IW encompasses the elements of command and control warfare, intelligence based warfare, electronic warfare, cyber warfare, psychological warfare and network centric warfare, military deception and secrecy as well as media support. Though the three Services have different set ups for IW activity, DIWA is the nodal and apex policy-making body to formulate joint and integrated responses to IW challenges. Therefore, an IW doctrine needs to be formulated, which it is believed, is under the process of being evolved by DIWA. However, it is at operational levels that weaknesses in our IW efforts exist. There is a need for joint linkages and joint planning to synchronise our response to all elements of information warfare.

The Indian armed forces have made considerable progress in establishing C4ISR networks. But given that these are service wise, there is a need for establishing a Joint Inter-Services Network. The other areas that need attention are:

- There is a need to adopt a similar model in our Territorial Army units. Even though In the era of cyber warfare, information warfare and net wars, information systems, both civil and military networks, should have adequate redundancy, survivability and electronic security.
- For optimisation, the strengths of our IT infrastructure and industry and advancements in satellites and radio-based systems should be jointly exploited by the military and civil sectors.
- Joint network and individual services networks should be able to function in all environments including nuclear. For instance, they should be hardened against or be resistant to an EMP attack.
- We need to induct a wide variety of military satellites for upgrading our strategic ISR, SIGINT, ELINT, COMMINT, imagery and navigation capabilities.
- We need to reflect on the Chinese model of net force based on their militia and examine whether there Computer Emergency Response Teams (CERT) at national and lower levels have been formed to respond

to cyber attacks on civilian infrastructure, the concept is more defensive in nature. A pro-active concept like that of net force may be more appropriate.

CONCLUSION

China sees IW as a field where asymmetric strategies can be used to better its rivals, especially the ones with better technological capabilities. It has applied People's War concept in the context of IW to leverage the availability of a large number of civilian IT experts. Simultaneously, it has not neglected the technological aspects. Over the years, it has acquired state-of-the-art technologies from the West and Israel, and as the Cox Report of May 1999 revealed through pilferage and spying, to upgrade its arsenal.

China has a large reservoir of scientists and a booming economy, which will help it in acquiring improved capabilities in the sphere of IW. It has made rapid advances in the field of IT and space-based systems, which will assist it in closing the technological gap with its peer competitors.

IW is important at the national, strategic and operational levels. At the national level, the aim is to alter the perceptions of the adversary so that victory can be achieved without fighting or at the lowest cost. Militaries all over the world have recognised IT and IW as force multipliers and as key battle winning tools. The electro-magnetic spectrum, a key component of the information domain, has become the new high ground to be captured for success of operations, thus highlighting the operational aspects of IW. China's rising military power has created concerns not only for the US but also its neighbours, which are equally if not more concerned of the possible destabilising effects of a likely assertive China. India and other neighbours need to evolve holistic strategies to safeguard their information domains and protect them from a variety of information attacks.

GEOSTRATEGIC IMPLICATIONS OF ENVIRONMENTAL CHANGE FOR ISLAND NATIONS: A CASE STUDY OF INDO-MALDIVIAN EQUATIONS

DHANASREE JAYARAM

The impact of environmental change, especially climate change on the island nations has been well-documented by the scientific community across the world. The islands could become uninhabitable due to two reasons, either by flooding or by crunch in the availability of freshwater resources. The threat of submergence is directly linked to sea-level rise caused by climate change. The availability of freshwater resources could be endangered due to various reasons, salt water intrusion being one among them. Moreover, island nations may not have the financial resources to import or build desalination units. Therefore, the two scenarios that could imperil the future of these island nations are absence of land and absence of water. The political establishments of these nation states have set the alarm bells ringing over the future of their territories and population by raising the issues of human rights and sovereignty at various international forums. Adaptation and mitigation are two legs of any country's climate change policy and these island states are no different. What separates these countries from the other countries in the world is that their domestic as well as international policies are centred on survival, security and sustainability. The possibility of their disappearance raises several pertinent questions that are

Dhanasree Jayaram is an Associate Fellow at the Centre for Air Power Studies, New Delhi.

Nation states will have to come together to not only rehabilitate the people of the erstwhile islands but also to reach upon consensus regarding their 'statehood'

applicable to not only the countries as nation states but also to the region in which they lie and the entire world. It has been found that environmental change could redraw the world map as well as create tensions or even opportunities of cooperation between nation states. If an entire island is wiped off the earth due to sea level rise or erosion, the resulting expansion of seas could be a source of conflicts between the major powers in the vicinity or even thousands of miles away. In fact, any body of water has been perceived by the great powers as a strategic asset that they could leverage to enhance

their sphere of influence along with interests. At the same time, the future of the whole country's population would be endangered. In addition, the concept of statehood would have to be revisited in order to establish parity. Nation states will have to come together to not only rehabilitate the people of the erstwhile islands but also to reach upon consensus regarding their 'statehood.' In such cases, statehood also becomes an inherent right of the people who could be displaced as the entire international community would be held responsible for the loss of their not only 'homeland' but also 'territorial space' to which no other nation state has any right. In this context, the geopolitical, economic, socio-cultural and legal implications of such developments are immense.

From India's perspective, the challenges are enormous. The country is already facing a series of repercussions of environmental change. Melting of glaciers, sea-level rise, subsidence, extreme weather events and destruction of ecosystems are some of them. Besides these internal challenges, it could also have to address the challenges posed by environmental change to its neighbours. Among them is the Republic of Maldives, which is in grave danger like the majority of island nations. Its ties with India are historical and in the current geopolitical scenario which is shaped by various factors including environmental change, the challenges, options and opportunities for both India and Maldives are plenty and they have to be explored. The 2012 "coup" and the current political and religious tensions in Maldives require India to take proactive steps to stabilise a region that is of pivotal

strategic interest to the latter. To say that a small island nation such as Maldives does not impinge on India's national security and strategy should be considered blasphemous especially since increasingly strategists are realising that India's strategic space lies at sea. The effectiveness or ineffectiveness of the United Nations Convention on the Law of Sea (UNCLOS); the settlement of the maritime boundaries and the Exclusive Economic Zone (EEZ); the displacement and resettlement of the so-called 'environmental refugees;' the redefinition of the contours of statehood and sovereignty; and the rebuilding of physical, economic, governance, socio-cultural and psychological structures are all important elements of the geopolitics of environmental change that the international community is yet to address. This paper would make an attempt to understand these concepts that have received very less attention due to their complex, unpredictable and, as of yet hypothetical nature.

The causes of beach erosion largely have been – coral mining, changes in the near shore current patterns due to both natural and human activities such as construction of coastal infrastructure, changes in the natural sediment balance and loss of source of sand

IMPACT OF ENVIRONMENTAL CHANGE ON ISLAND NATIONS: A CASE STUDY OF MALDIVES

As far as the impact of environmental change on Maldives is concerned, the country is already coping with a series of problems such as beach erosion, crunch in freshwater resources, excessive waste, sea level rise, to name just a few. According to records of the Ministry of Planning Human resources and Environment of Maldives, beach erosion has been identified as a serious issue in nearly 60 inhabited islands and many resort islands. The causes of beach erosion largely have been – coral mining, changes in the near shore current patterns due to both natural and human activities such as construction of coastal infrastructure, changes in the natural sediment balance and loss of source of sand. Coral mining has been happening in Maldives for years mostly due to the increasing demands of the tourism

and the construction industries. This is one of the major reasons for reduced protection against normal tide and wave-induced erosion by increasing water depth. It also augments the threat of storm-induced erosion and flooding which affects marine diversity, which in turn affects the coral reef fish population thereby impacting livelihoods of the fishermen. Similarly, incidents of dredging, harbour deepening, land reclamation and mining for construction materials were widely reported in Maldives during 1980s and 90s, the consequences of which are being faced in the twenty first century although presently, such activities have been regulated or banned. Pollution and overfishing have also led to stark environmental changes in the surrounding seas. The availability of freshwater resources has been constrained by high density population. For instance, in Male, due to the depletion of extensive and deep freshwater aquifers, desalination plants have been installed to supply drinking water to the residents. Similar arrangements would become a necessity in some of the islands that are heavily populated. Intrusion of saltwater is also having an adverse impact on both natural and agricultural crops.¹

As far as the impact of 'climate change' on Maldives is concerned, the rising sea levels has been identified as the biggest threat that could result in beach erosion, more powerful storms, higher storm surges and threats to biodiversity. The country has around 1,200 islands and atolls having a landmass of 115 square miles. At its highest point, it is only 8 feet above sea level.² It is also an acknowledged fact that coral growth could be stunted due to the phenomena of coral bleaching and increased sea erosion, rising water temperature and ocean acidification. This in turn could imperil the coral sea-defences that are responsible for the sustenance of staple crops, like salt-sensitive mango and taro as well as forests. If the sea level rise exceeds 1.2 metres, the airport located in Male would be submerged. Besides, Male is one of the most densely populated towns in the world. This would be

1. See for more information, "Paper 8: Environmental Changes in the Maldives: Current Issues for Management - By Mohamed Khaleel and Simad Saeed, Ministry of Planning Human Resources and Environment, Ghazee Building Malé, Republic of Maldives," available at <http://www.fao.org/docrep/X5623E/x5623e0r.htm>, accessed on 13 September, 2012.
2. Justin Hoffmann, "The Maldives and Rising Sea Levels," *ICE Case Studies* (May, 2007), n. 206, see <http://www1.american.edu/ted/ice/maldives.htm>, accessed on 19 September, 2012.

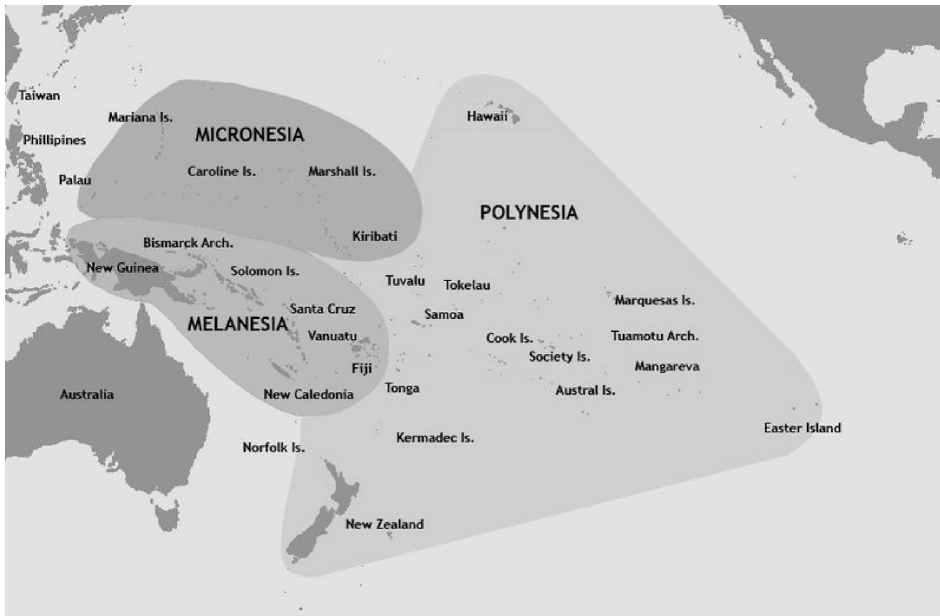
the biggest setback for the Maldivian economy that depends heavily on its tourism industry. If the sea level rise exceeds 2 metres, nearly 50% of Maldives is expected to be inundated.³

Similar problems are being faced by the islands in the South Pacific and the Caribbean. Tuvalu, an island nation in the Pacific, declared a state of emergency due to acute shortage of freshwater in 2011. The problem was so urgent that the freshwater supplies had already run out in some areas, especially due to poisoning of well water by the rising tides. Water supplies and desalination units were carried to Tuvalu from New Zealand as a short-term measure.⁴ Kiribati was the first victim of submergence of uninhabited islands in 1998. Thereafter, in Vanuatu, the people of the low-lying areas were evacuated as a precaution though these islands have not disappeared till now. India was struck in 2006, when the island of Lohachara, inhabited by 10,000 people was washed off the map. The island lay in India's part of the Sundarbans. This was the first time that an inhabited island became a victim of the rising sea levels.⁵ A dispute between India and Bangladesh over an island called the New Moore Island resolved itself when it was engulfed by the rising sea water in 2010.

The rising temperatures are being attributed to increasing consumption of fossil fuels by the industrialised and emerging countries that in turn causes greenhouse gas emissions (GHGs)

-
3. R. K. Gupta, "Global Warming and its Effects," in R. K Gupta, Klaus Bosselmann and Prasenjit Maiti (eds.), *Global Environment: Problems and Policies* (Atlantic Publishers & Distributors (P) Ltd: New Delhi, 2008), vol. 3, p. 59.
 4. See, "Tuvalu declares emergency over water shortage," *BBC*, 3 October, 2011, available at <http://www.bbc.co.uk/news/world-asia-pacific-15147043>, accessed on 18 September, 2012.
 5. Geoffrey Lean, "Disappearing world: Global warming claims tropical island," *The Independent* (24 December, 2006), see <http://www.independent.co.uk/environment/climate-change/disappearing-world-global-warming-claims-tropical-island-429764.html>, accessed on 18 September, 2012.

Figure 1: The South Pacific Islands



Source: http://en.wikipedia.org/wiki/File:Pacific_Culture_Areas.jpg

The island nations have been raising their voices at international climate change negotiations to make a clarion call to the international community to come to the understanding that actions of the industrialised and emerging countries would impact them more than any other country on the surface of the earth, as it could put their very existence at risk. The rising temperatures are being attributed to increasing consumption of fossil fuels by the industrialised and emerging countries that in turn causes greenhouse gas emissions (GHGs). Not only emissions, even the garbage from other countries reach the shores of these island nations which create significant amount of environmental havoc. For instance, the trash from Europe and Africa ends up on the beaches of Antigua. In Antigua and Grenada, coastal erosion is a serious problem besides the fact that the islands have experienced unusual hurricanes in the recent past like Hurricane Ivan in 2004. The causes are not restricted to just climate change or even El Nino; these are also purported to be direct consequences of sand mining in Grenada and

large-scale developmental activities in Antigua.⁶

THE GEOPOLITICS AND GEOSTRATEGY OF ENVIRONMENTAL CHANGE: OPTIONS FOR MALDIVES

The geographical alterations with the disappearance of islands could have serious geopolitical and geostrategic repercussions. Two primary factors – statehood and maritime boundaries – are expected to be most seriously affected as a result of this.

The existing international laws and conventions have several loopholes especially since they do not take possible environmental change and geographical alterations into consideration. Article 1 of the Montevideo Convention on Rights and Duties of States (1933) outlines four principles that mark the existence of a state – (a) a Government; (b) a defined territory; (c) a permanent population; and (d) a capacity to enter into relations with other states.⁷ The question is, if the island nations get submerged or become uninhabitable in the future, will Maldives be still considered a nation state? If the islands of Maldives disappear, it is not clear if it would still be given the status of a ‘nation state’ since it would be left with no territory. If the islands do not disappear but become uninhabitable due to various reasons such as lack of freshwater resources, large-scale subsidence or frequent storm surges, even then the need for resettlement of its population becomes an international duty and responsibility. In such a case, Maldives would still have the territory (albeit uninhabited) but, in the process of resettlement, will the country still retain its political, economic and administrative structures if it is ‘forced’ to occupy other nation states’ territories? If Maldives is left without a Government, then its capacity to enter into relations with other states is questionable. Therefore, the ‘statehood’ of Maldives or any other

The geographical alterations with the disappearance of islands could have serious geopolitical and geostrategic repercussions

6. Megan Thompson, “Message in a bottle: reporting from Antigua and Grenada,” *Worldfocus* (19 October, 2009), available at <http://worldfocus.org/blog/2009/10/19/message-in-a-bottle-reporting-from-antigua-and-grenada/7847/>, accessed on 30 September, 2012.

7. Cleo Paskal, *Global Warring: How Environmental, Economic and Political Crises will Redraw the World Map* (, Toronto: Key Porter Books 2010), p. 224.

island nation that faces similar situations would be under scrutiny. For instance, Kiribati, a Pacific Ocean country whose islands are merely five metres above sea level, in order to maintain its statehood is considering to move its population to vast floating platforms – a project expected to cost US \$2 billion.⁸

If the island nation is allowed to retain its structures on another country's soil, its statehood would be secured. Protecting nationhood and redrawing political boundaries would be the next step. The subtle difference between 'statehood' and 'nationhood' comes from the fact that 'statehood' is constituted by the 'citizens' and the Government machinery while 'nationhood' could also imply a group of people who share common culture, identity and language. Nationhood is a more complex concept as it permeates state boundaries. Today the majority of countries around the world are multi-ethnic and multi-religious and therefore, the integration of population of these island nations with another country's population is not expected to be difficult. Inter-mingling of nationalities has been happening for ages. However, countries have confronted enormous roadblocks in the process of integration of different nationalities and formation of a 'state.' India is one such country wherein the political and administrative machinery successfully integrated innumerable nationalities after Independence. The formation of the Indian Union was however marred by partition in the name of religion. Thus, along with citizenship, nationality would also have to be taken care of at least for the first two generations that settle on foreign territories.

Coming to Maldives, it has three main options. First, it could elevate certain part of its territory and shift all or some of its population to the elevated territory to maintain its statehood. Second, it could create an artificial island in which case the law is unclear about a nation state's rights. It would still qualify as "defined state territory for purposes of "statelessness," and may also be recognised internationally as defined territory on the basis of fairness." In addition, the permanent population

8. Michael Field, "Kiribati considers relocating on floating platforms," see <http://michaelfield.org/Kiribati%20considers%20relocating%20on%20floating%20platforms.htm>, accessed on 17 September, 2012.

criterion has been satisfied before the United Nations by a number of people as low as 50.⁹ Third, it could have a Government in 'exile'. If Maldives fails to exercise these options, its statehood could be lost; along with it, its territorial rights over various natural resources including fishing grounds, oil and natural gas reserves as the disappearance of the islands could lead to the conversion of their erstwhile territorial region into international waters under the UNCLOS. It is very clear that the UNCLOS has been framed for an unchanging environment and the law does not specify the line of action that could be adopted in case existing coastlines and islands vanish resulting in a change in maritime boundaries. The Convention states that a country's maritime Exclusive Economic Zone (EEZ) extends 200 nautical miles off its coastline, unless it has a continental shelf, in which case the seabed claim can be extended up to 350 miles from the coastline.¹⁰ An "artificial island" can have only a 500 metres safety zone.¹¹ Therefore, it may not be economically feasible to build an artificial island under the present law for statehood. Maldives could freeze its maritime boundaries to secure its EEZ and expect that no one would challenge or revise it. "The default baseline is the normal low water mark, designated in official maps, but the law allows states to set baselines using other mechanisms, such as drawing straight baselines or fixing maritime limits."¹² The baseline is the point from which the territorial sea is measured. If the international community decides to take the baseline as the fixed parameter depending on the low water mark, these island nations would lose their EEZs; as the coastline retreats, the low water mark retreats. If the existing baselines are fixed, the island nations' maritime zones would be fixed too irrespective of the coastal retreat. If islands disappear completely, even then this logic could be employed to freeze the political boundary.

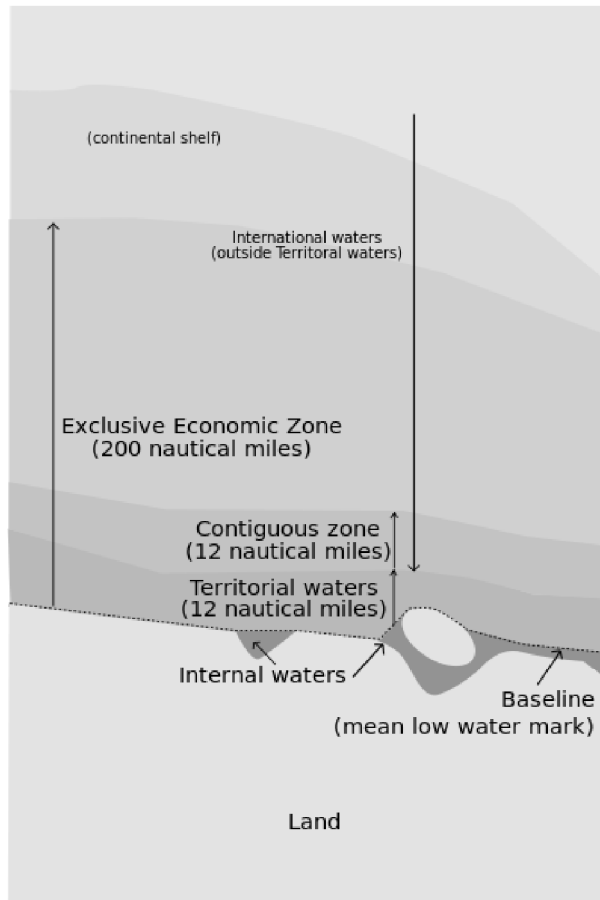
9. See, "Consolidated Notes from Threatened Island Nations: Legal Implications Of Rising Seas And A Changing Climate," May 23-25, 2011, Columbia University, p. 4, http://www.law.columbia.edu/null/download?&exclusive=filemgr.download&file_id=59134, accessed on 3 September, 2012.

10. n. 7, p. 233.

11. Cleo Paskal, "Strange case of the disappearing islands," *nzherald.co.nz* (3 April, 2010), see http://www.nzherald.co.nz/world/news/article.cfm?c_id=2&objectid=10635956, accessed on 3 October, 2012.

12. n. 9, p. 6.

Figure 2: United Nations Convention on the Law of the Sea



Source: <http://en.wikipedia.org/w/index.php?title=File:Zonmar-en.svg&page=1>

The population of Maldives need not necessarily migrate to one particular country. If it is spread across various countries, it need not also necessarily have a physical Government. It could still maintain its statehood through a virtual community irrespective of where the population is, which would make their administration and the Government virtual. The usage of the terminology of 'refugee' in this context would be lop-sided in case the 'citizens' of a particular country are forced to leave their countries which would be left with just ocean waters. It has multiple connotations, mostly negative besides the inherent implications of 'human rights.' Some of them include – dependency, lack of

autonomy, statelessness, protection by international law among others. Although the UN does not recognise refugees created by environmental crises under the United Nations Human Rights Commission (UNHCR), in the future the chances of their recognition are palpable. However, it would be better not to categorise the peoples of island nations as refugees as they would be politically and economically stable, assuming they can retain rights to revenue generating mechanisms such as fisheries, internet domain registration, seabed mining, stamp production, etc. They could be provided protection under international law but their jurisdiction should be restricted to the country that offers them shelter so that they are not regarded as a 'burden.' The concept of 'stakeholder' would be a better option in which case they could hold dual citizenship – that of the island nation that would no longer exist physically and the particular country that gives them shelter. They could have an understanding with the host country's Government to hold single citizenship, that of the island nation alone and still contribute to the host country's economic development.

Since there is no international system or law that defines the future of statehood of island states that could face extinction, these issues would probably be negotiated bilaterally

ENVIRONMENTAL CHANGE AND INDO-MALDIVIAN EQUATIONS

Since there is no international system or law that defines the future of statehood of island states that could face extinction, these issues would probably be negotiated bilaterally. If they are not resolved bilaterally and an attempt is made to address them multilaterally, the problems would continue as the UN has so far failed at various levels on the front of global environmental governance. Furthermore, the displaced population cannot be accommodated at the UN headquarters. Even in the case of bilateral settlements, the role of the UN would be relevant, especially in recognising a new form of statehood – “a de-territorialised nation state or a nation ex-situ.”¹³ This is crucial to maintain the UN membership of the extinct

13. n. 9, p. 5.

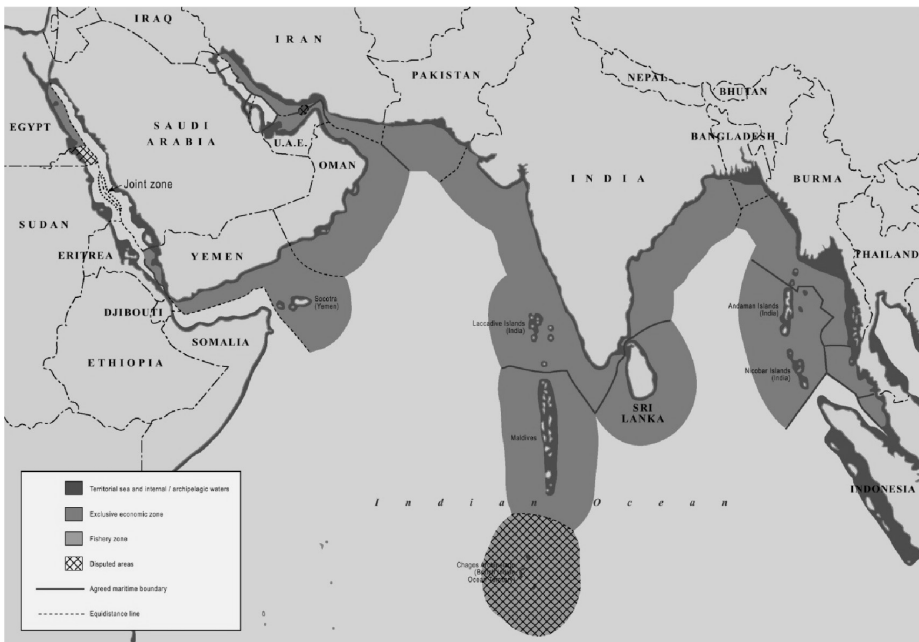
or uninhabited island nation which would allow it to wield the benefits of being a part of the international organisation. In the case of Maldives, it could strike a deal with India, one of its closest and definitely strongest neighbours. In the negotiations, the emphasis has to be laid on the needs and interests of both Maldives and India. The extinction of Maldives is a special case since the possibility of majority of the country's population migrating to India is very high, possibly making pockets of India its de facto territory. Moreover, the cause of migration is unprecedented and thus, the international community has an obligation towards these people. India could easily gain the moral high ground by welcoming Maldivians and declare to the rest of the world, especially the West how the country has shown character by taking responsibility for something it is not required to. Climate change is chiefly ascribed to the industrialised countries' uninhibited emissions during their industrialisation process. In order to bypass the categorisation of immigrants as 'refugees,' which would automatically make them 'special' under the United Nations Convention on Relating to the Status of Refugees both countries need to reach upon specific agreements. The plausible scenarios are as follows.

First, India might decide not to let the Maldivians have a Government in exile on Indian land especially due to its China experience over the Tibetan Government in exile. Instead it could provide the Maldivians the rights that any immigrant is entitled to get in terms of financial and social security. This would be rejected plainly by the Government of Maldives as this would not only mean that they would lose their statehood but also they would have to fight for their rights and for the Indian citizenship. India would get nothing in return for accommodating the Maldivian population on its land. Moreover, the chances of a Maldivian Government in exile to be an irritant for India's foreign policy are remote at this stage.

Second, India could demand for Maldivian national waters, that is Maldives' state sovereignty, in exchange for a Maldivian Government in exile on the Indian soil. The Maldivians would come to settle in India with wealth and resources and not empty-handed. Therefore, the chances of them being an economic liability is very minimal. Since Maldives' population is

just over 3 lakh the resource stress is expected to increase only marginally. In fact, the principle of sharing resources would be ideal for both countries since the Maldivian population is small and India's land is huge. If India is granted partial or collective rights over Maldivian waters, its EEZ and coastal security zone would get extended. This would mean that India and Maldives could share fishing and seabed mining rights and the proceeds of such activities could again be shared; these could specifically be used for the economic development of the Maldivian immigrants. This would also mean that India would share maritime boundary with the island of Diego Garcia (US military base).

Figure 3: India-Maldives EEZ Map



Source: Borders Research Unit, Durham University, UK (Courtesy Cleo Paskal)

Third, Maldives could purchase land in India as former President Mohammed Nasheed has indicated on various occasions. Even before taking power officially, he had voiced out his plan to “divert a portion of the country’s billion-dollar annual tourist revenue into buying a new homeland

– as an insurance policy against climate change that threatens to turn the 300,000 islanders into environmental refugees.”¹⁴ Kiribati’s President made an unprecedented announcement in 2012 that he was holding talks with Fiji’s Government to buy up 5,000 acres of “freehold land on which his countrymen could be housed” as rising sea levels were causing many of the atolls to disappear fast.¹⁵ This again is improbable in the case of Indo-Maldivian settlement as India would not like to carve out a state from its existing inhabitable land. The political repercussions would have significant bearing in a country such as India in which land acquisition itself is a huge problem. According to reliable sources, Maldives has already broached such proposals with several countries including India. What differentiates this scenario from the second one is that in the former, no specific territory would be demarcated for the Maldivian population.

A country within a country could serve the interests and purposes of both India and Maldives on the one hand. It could also prove to be a grave security threat which would be discussed later in the paper. From India’s perspective, it would give India two votes at the UN. At the same time, India has to decide how much sovereignty India could afford to give to Maldives. On the one hand, India could allow Maldives to have a separate Government and on the other, it could even create a Ministry of Maldivian Affairs to administer the pockets or areas occupied or controlled by the Maldivians. Such a ministry could be jointly handled by Indians and Maldivians with the latter forming the majority and holding the position of the Minister and it could run on trusteeship model. This would ensure that all the financial resources acquired from the extended portion of India’s EEZ would be distributed in a fair manner between both countries and would be used for the welfare of Maldivians. From the perspective of Maldives, if the second option is administered, they could always return to the islands when the

14. Randeep Ramesh, “Paradise almost lost: Maldives seek to buy a new homeland,” *The Guardian* (10 November, 2008), see <http://www.guardian.co.uk/environment/2008/nov/10/maldives-climate-change>, accessed on 3 October, 2012.

15. Paul Chpaman, “Entire nation of Kiribati to be relocated over rising sea level threat,” *The Telegraph* (7 March, 2012), available at <http://www.telegraph.co.uk/news/worldnews/australiaandthepacific/kiribati/9127576/Entire-nation-of-Kiribati-to-be-relocated-over-rising-sea-level-threat.html>, accessed on 12 September, 2012.

islands reappear, if they do at some point of time in the future. For this, Maldives has to clearly mention this clause in the plausible agreement with India. They could also have a partially active physical trust or Government with minimum number of administering officers to administer the resources. This Government could be virtual rather than physical.

THE POSSIBLE IMPLICATIONS OF INDIA-MALDIVES SETTLEMENT

It is important to list out the various implications of such an arrangement, whether they are political, economic, socio-cultural or security-related. The political ones mainly arise from the internal set-up of India. First and foremost, India has to set things straight in case of displacement of people from the Lakshadweep islands that are geophysically similar to Maldives. Therefore, India's own EEZ would be affected in which case it should also actively pursue the plan to 'freeze' the borders, which would be an added incentive. The need for rehabilitation of the displaced population from these islands is undoubtedly paramount. Likewise, India also has to address the concerns of population residing on the low-lying islands and atolls of the Andaman and Nicobar Islands in the Bay of Bengal region.

If the first option is executed, India might have to address the fates of thousands of 'refugees' crossing over from Bangladesh. One has to keep in mind that when it comes to environmental change, the future of Bangladesh is also not very bright. It has been predicted that 45 cm of sea-level rise may inundate 10-15% of the land by the year 2050 resulting over 35 million climate refugees from the coastal districts.¹⁶ Until now there has been no agreement between India and Bangladesh with regard to the management of the refugee problem which the former has been facing for decades. Signing of an Indo-Bangladesh Agreement on similar lines of the Indo-Maldivian Settlement is neither probable nor pragmatic since the immigrants from Bangladesh are expected to be much larger in number,

16. See, "Policy Study on The Probable Impacts of Climate Change on Poverty and Economic Growth and the Options of Coping with Adverse Effect of Climate Change in Bangladesh," General Economics Division, Planning Commission, Government of the People's Republic of Bangladesh & UNDP Bangladesh, p. 25, <http://www.plancomm.gov.bd/The%20probable%20impacts%20of%20climate%20change%20on%20poverty%20and%20economic%20growth%20and%20the%20options%20of%20coping%20w.pdf>, accessed on 18 September, 2012.

The Indo-Maldivian settlement would set a dodgy precedent for the rest of the international community, particularly countries like China, which may like to claim territories

and the chances of them being an economic liability on India are higher. Every individual state within the Indian Union has to be taken into confidence with regard to the settlement of the immigrants. The Indian states such as West Bengal, Assam, Meghalaya and Tripura have faced several problems with the Bangladeshi refugees over the past few decades. One has to take into consideration the fact that a significant chunk of Bangladeshi immigrants have secured the rights that an Indian has inherently by hook or

by crook. They vote in the Indian elections and hold Indian ration cards and at times even Indian passports. The Maldivians would still hold ownership of the Maldivian passport co-authorised by the Indian agencies and they would vote for a Maldivian Government. If they hold dual citizenship, then they would exercise their right to vote in the Indian elections as well.

The Indo-Maldivian settlement would set a dodgy precedent for the rest of the international community, particularly countries like China, which may like to claim territories on this basis and take in the population of the extinct islands (in the South China Sea and the South Pacific Ocean). The manner in which environmental change could reshape geopolitics and international relations is unimaginable. Way back in 1988, a Chinese article said, "In order to make sure that the descendants of the Chinese nation can survive, develop, prosper and flourish in the world in the future, we should vigorously develop and use the oceans. To protect and defend the rights and interests of the reefs and islands within Chinese waters is a sacred mission....The [Spratly] Islands not only occupy an important strategic position, but every reef and island is connected to a large area of territorial water and an exclusive economic zone that is priceless."¹⁷ The agreement between India's flagship oil explorer – the Oil and Natural Gas

17. Lieutenant Michael Studeman, U.S. Navy, "Calculating China's Advances in the South China Sea Identifying the Triggers of "Expansionism," *GlobalSecurity.org* (Naval War College Review: Spring 1998), see <http://www.globalsecurity.org/military/library/report/1998/art5-sp8.htm>, accessed on 11 September, 2012.

Corporation – and Vietnamese firms for exploring oil and natural gas in the South China Sea sparked off fresh tensions between India and China. The islands in the South China Sea are not inhabited but are being claimed by China, Taiwan, the Philippines, Malaysia, Brunei and Vietnam. In the case of the South Pacific islands, the equations are more complicated. China's penetration in the region is immense. According to reports, China's business investments and surprisingly military assistance to countries such as Fiji, Vanuatu, Tonga and Papua New Guinea are steadily increasing, so much so that their economies are heavily dependent on Chinese investments as well as Chinese migrants. Many analysts have even suggested that the South Pacific Ocean has the potential to turn into a theatre of Cold War between the US and China with the US' dominance in the region waning and China's influence rising rapidly.¹⁸ Scepticism has seeped into these countries' ties with countries such as Australia and New Zealand, which were obvious allies or partners earlier due to their heavy-handed approach. Even a country such as New Zealand offered Tonga aid for a solar power plant on the precondition that the plant would be built only by a New Zealand government-owned company which goes against the principles of no tied aid. If there is no competitive bidding, the costs of energy are expected to rise, which the economy of Tonga might not be able to withstand in the long-term.¹⁹ China even ran a Space Monitoring Station in Kiribati (since closed down). In 2011, one of the US territories, Northern Mariana offered to lease out up to ten of its territory's uninhabited islands to China to fight the growing unemployment in the country.²⁰ The US acquired these territories during the Second World War due to their

Many analysts have even suggested that the South Pacific Ocean has the potential to turn into a theatre of Cold War between the US and China

18. Bertil Lintner, "The Sinicizing of the South Pacific," *Asia Times* 18 April, 2007, available at <http://www.atimes.com/atimes/China/ID18Ad02.html>, accessed on 18 September, 2012.

19. Cleo Paskal, "Why the West is Losing the Pacific to China, the Arab League, and Just about Everyone Else," *Huffington Post* (24 November, 2010), see http://www.huffingtonpost.com/cleo-paskal/why-the-west-is-losing-th_b_786668.html, accessed on 18 September, 2012.

20. Available at "South Pacific: U. S. Territory Offers to Lease Surplus Islands to China," 27 October, 2011, <http://www.privateislandnews.com/south-pacific-u-s-territory-offers-to-lease-surplus-islands-to-china/>, accessed on 30 September, 2012.

strategic locations for military bases. China has made its mark in every nook and corner of the world and it could very well decide to take complete control of these islands under any circumstances, even environmental change. Interestingly, China's allies such as Tonga has quite a few mountainous islands that are not likely to be affected by climate change while the US' allies such as the Marshall Islands and the Federated States of Micronesia are low-lying and are therefore highly susceptible.²¹ In the Asia-Pacific strategy of the US, these island nations are expected to find prominent position. In 2012, Secretary of State, Hillary Clinton visited Rarotonga (Cook Islands) to attend the meeting of the Pacific Islands Forum (PIF) and interestingly remarked that "the Pacific was big enough for everyone, including the European Union (EU), Canada, the UK and China" and that she was looking for an "American model of partnership."²² The politics of climate aid is especially expected to gain momentum in this part of the world with all these potential stakeholders' (including Russia) keenness to pump money into these economies and compete for strategic space.

The security-related threats of the Indo-Maldivian agreement need to be investigated. The percolation of Wahhabi elements and ultra-conservative ideology into the Maldivian society is being looked at with lot of interest by India as this could directly impact India's national security. The involvement of Pakistani terrorist groups such as Lashker-e-Taiba in the country has raised concerns for India. Moreover, incidents involving hard-line Islamists are on the rise in Maldives such as the attack on the Buddhist statues in the Maldives National Museum or forced closure of massage parlours and spas during the so-called coup in 2012. The same Indian Government that intervened and averted a coup in 1988 in Maldives when a 'dictator', Maumoon Abdul Gayoom was in power, this time chose to remain neutral and watch the drama unfold in the island country. The democratically elected Mohammed Nasheed was replaced by Dr. Mohammed Waheed, his running mate in the historic 2008 elections with the help of the police

21. n. 7, p. 239.

22. Luke Hunt, "The World's gaze Turns to the South Pacific," *The Diplomat* (4 September, 2012), available at <http://thediplomat.com/2012/09/04/the-worlds-gaze-turns-to-the-south-pacific/>, accessed on 30 September, 2012.

forces, the armed forces and quite evidently the religious fundamentalists who were on the streets raising slogans against former President Nasheed while he resigned reportedly “at gunpoint.” This decision could be a result of cumulative reasons. First, the Indian intelligence agencies might have failed to gauge the volatile situation in Maldives. Second, India might have perceived the “coup” as a consequence of internal instability within the ruling party. Third, India might have faced moral dilemma in terms of supporting either of the two leaders considering that there was no outright endorsement by Dr. Waheed of his association with elements that could be deemed security threats to the nation. Whichever may be the case, the Government of India received flak and to add insult to injury, stories about firm backing of the new President by fundamentalist elements in Pakistan and Saudi Arabia began to surface.²³ Very clearly, for any settlement between the two countries, the democratic credentials of Maldives have to be restored and radicalised units have to be flushed out. This in fact would be the biggest roadblock for any form of cooperation between the two countries especially since India’s ties with the Nasheed Government were considered extremely cordial. When the two countries reach an agreement, they have to create mechanisms by which such elements could be filtered and not allowed to enter India. Besides, enabling smooth amalgamation of the Maldivian way of living with the Indian way of living by building bridges becomes crucial.

Indian Navy has been mandated to be a net security provider to island nations in the Indian Ocean region

China’s influence in Maldives is also well-documented, so much so that it had approached Maldives with the proposal to help the latter build a naval (submarine) base at Marao. China’s decision to establish a full-fledged embassy as well as grab several development projects in Maldives has also

23. Suman Sharma, “US fear stopped Indian armed action in Maldives,” *The Sunday Guardian* (12 February, 2012), available at <http://www.sunday-guardian.com/news/us-fear-stopped-indian-armed-action-in-maldives>, accessed on 12 September, 2012.

reportedly created panic among the Indian security establishment.²⁴ Couple of days later, India's Defence Minister, A. K. Antony publicly claimed that "the Indian Navy has been mandated to be a net security provider to island nations in the Indian Ocean region."²⁵ Maldives has been actively engaging with both countries to fulfil their national interests. It is imperative for India to make its stand clear to Maldives regarding China's role in the region. Maldives should be allowed to continue to engage with China at the level in which India engages with the latter to respect the "country within a country" principle and one of the criteria of the Montevideo Convention on Rights and Duties of States. However, the territorial integrity and sovereignty of India has to be respected. For example, Maldives cannot let China build infrastructure on Indian soil without India's green signal, if the designated area is controlled by Maldivians. Similarly, if the Government of Maldives is going to be virtual, the voters residing in other countries should not be allowed to vote on an issue that concerns India.

Economically, both countries are expected to be in a win-win position. The possibility of extension of India's EEZ in exchange for Maldives' statehood is a good proposition that could serve both countries' interests. India could fulfil the financial requirements of the Maldivians from the revenue raised from the Maldivian waters by creating a Maldives Fund. The economic activities of Maldivians would augment the overall growth of India's Gross Domestic Product (GDP). The 'stakeholder' principle would imply that all the revenues and profits would be shared equitably. Socio-culturally, it is very important that the Maldivians are not forced to get rid of their sense of identity since the entire international community would be somewhere down the line responsible for the submergence of the islands. India has to create flexible systems for them to adapt to the Indian society. The differences between the Indians and Maldivians (in

24. Rajat Pandit, "China's stepped up moves in Maldives worry India," *Times of India* (10 October, 2011), available at http://articles.timesofindia.indiatimes.com/2011-10-10/india/30262896_1_indian-military-surveillance-systems-ins-tillanchang-maldives, accessed on 18 September, 2012.

25. Sujana Datta, "India takes on ocean-cop role, tests China," *The Telegraph* (Calcutta: 13 October, 2011), available at http://telegraphindia.com/1111013/jsp/frontpage/story_14618394.jsp#, accessed on 18 September, 2012.

this context, the liberal ones) are not that stark and the latter are said to have close connections with the former in a number of spheres. The earliest settlers are in fact said to be from South India. Ethnically called Dhivehis, they are said to be related to the people in the Indian subcontinent ethnically and linguistically. In order to make assimilation or integration easier, India has to wait till the second or third generation is born which would have closer links with the Indian society than the first generation. Instead of dual or single citizenship, the two countries could propose a hybrid citizenship, that is, Indo-Maldivian citizenship for the first generation. The subsequent generations could choose their citizenship. Also, preservation of their language and culture should be given as much priority as that of the cultures and languages of India. This would create goodwill among Maldivians and their integration with the Indian society could become effortless without conflicts. This is easier said than done especially with the changing societal dynamics of Maldives. Therefore, before any decision is made, the first and foremost task would be to conduct an in-depth study of the Maldivian society and its requirements.

CONCLUSION: ALTERNATIVES AND SOLUTIONS

Besides an arrangement with India, Maldives has other options. Before finalising such an arrangement, as already discussed, several hurdles have to be crossed both regionally and internationally. With the change in maritime boundaries the claims and counter-claims over the ocean waters of Maldives would increase, especially if they are declared international waters. For instance, the US may like the ocean waters of Maldives to be declared international waters as they have a base on Diego Garcia, an island located at a distance of less than 800 miles from Maldives. They could extend their influence into these waters as well. The US has always believed in the idea of 'freedom of the seas' because of which they have not even signed the UNCLOS. However, emerging powers such as China and even India with their blue navy ambitions may not let the US dominate the seas as before as changing geopolitics has changed the equations between the US and the rest of the world.

The Maldivian population could migrate to other countries such as the Arab countries, Sri Lanka or Australia (because of the large stretch of unoccupied land). However, the Maldivian culture is closest to India and Sri Lanka with similar traditions, cuisines and climates. India is expected to be the most-favoured option among the two due to the greater degree of opportunities available in the country. India's involvement in staving off the coup way back in the late eighties brought the two nations together. Moreover, the people-to-people contact has flourished over years. Hundreds of Maldivians flock to India every year for cheap, quality medical treatment. Factors such as lifestyle, cost of living and demographics would also play a major role in possible arrangements between India and Maldives. However, India has to tackle the anti-India sentiments among a section of the Maldivian polity that deems India the 'big brother.' It would be interesting to see how China might react in such a scenario. Maldives is one of the keystones of China's policy in the Indian Ocean region. Hence, the possibility of opposition from China to an Indo-Maldivian arrangement is quite credible and substantial. India has to help its neighbours understand why it is a better long term partner than China.

There is yet another possibility of corporations trying to give shelter to people and own a country in case an artificial island is created. If corporations begin to own statehood, they would have omnipotent rights and powers which they could exploit for private profits, which in turn could create international instability. As Cleo Paskal comments, "That statehood could then be sold off to corporations who could then literally become sovereign, writing laws under which they flag ships, bank, run telecoms, sell arms, etc, with the impunity and immunity of statehood."²⁶ This is a probable scenario in case an island nation faces trouble environmentally or even financially.

From all the arguments and counter-arguments, it is very clear that there is dire need to alter or create new legal infrastructure so that sovereignty is redefined or recreated in a different form. If bilateralism has to be averted in favour of multilateralism, the legal fraternity has to

26. n. 11.

look at the seas with a fresh outlook and redraw the legal boundaries to avoid conflicts or even wars. Interestingly, the small island state of Palau made its move to seek International Court of Justice's advisory opinion on climate change in 2011.²⁷ The major powers such as the US, China and India are in search of potential geostrategic commercial and military bases. Environmental change has opened up new vistas of opportunities for these powers to exploit the inevitability of the impacts of such a change on the island nations. The island nations also need to pull up their socks to face the worst impacts of environmental change and not wait for the legal authority to come to their rescue. To defend their sovereignty, they have to deal with 'receptive' countries. They have spoken with a common voice at all the climate change negotiations. They have had striking differences with the industrialised and emerging countries over the rising temperatures and reduction of carbon emissions. Maldives, unlike India, has always pressed for a legally binding agreement and a temperature rise to well below 1.5°C. Former President Nasheed, gave a rousing speech at Copenhagen in which he reiterated, "Carbon concentrations higher than 350 parts per million, and temperature rises above 1.5 degrees, will submerge my country, dissolve our coral reefs, turn our oceans to acid and destabilise the planet's climate." He continued, "For global emissions to peak by 2015 as science demands, industrialised countries must raise their level of ambition. They must commit to collective reductions of 40% by 2020, and 95% by 2050. But developing countries must also do their bit. The rich world may have caused the climate crisis, by filling our atmosphere with pollution. But two wrongs don't make a right. Developed countries created the climate crisis; developing countries must not turn it into a calamity."²⁸ Their role in securitisation of the climate change issue is instrumental. They openly endorsed the Western powers' attempts to push for a deal that

27. See, "Palau Plans to Seek ICJ Advisory Opinion on Climate Change," 26 September, 2011, available at <http://internationalawobserver.eu/2011/09/26/palau-plans-to-seek-icj-advisory-opinion-on-climate-change/>, accessed on 18 September, 2012.

28. See, "Maldives President pleads for climate action," http://news.xinhuanet.com/english/2009-09/23/content_12098838.htm, accessed on 12 September, 2012.

would require the developing countries to cut emissions under a legally binding mechanism by taking the issue to the United Nations Security Council twice (2007 and 2011). It is time for them to stop entangling themselves in the labyrinth of debates since the debates are expected to take their own course depending on how different countries define their national interests. Meanwhile, the island nations have to protect their national interests themselves.

ADDRESSING NUCLEAR TERRORISM: AN INTERDISCIPLINARY APPROACH

YEON JUNG JI

Presumably, the dream of nuclear peace might be disrupted not by states, rather by non-state actors. The danger of nuclear terrorism is reverberating nowadays due to the chances of a nuclear weapon falling into terrorist hands or a possible terrorist sabotage on a nuclear facility. On 15th August 2012, Leon Panetta, U.S. Defence Secretary, warned of the increasing risk of nuclear terror, mentioning that some of Pakistan's nuclear weapons might be handed over to terrorists if Islamabad failed to control terrorism.¹ After five days, reportedly, the International Atomic Energy Agency (IAEA) attempts to seek more financial support to stride, to prevent and mitigate chances of nuclear terrorism in the world.²

While many argue the low possibility of nuclear terror in abundant literature, the fear of nuclear terror is not lessening. This is probably owing to a number of reasons: first, various kinds of massive terror attacks have seen unleashed since 9/11, giving a impression that any kind of attack may be possible in the long-run; second, the prevention of nuclear terror by a state is not viewed to be fully dependable as terrorist groups always explore all possible approaches to attain their desires no matter how much damage they do to have; third,

Yeon Jung Ji is a Visiting Fellow at the Centre for Air Power Studies, New Delhi.

1. "Pakistan's Nuclear Weapons May Fall into Hands of Terrorist: Leon Panetta", *The Economic Times*, August 15, 2012 available at http://articles.economictimes.indiatimes.com/2012-08-15/news/33216731_1_nuclear-weapons-nuclear-power-terrorism accessed on 15 Sep 12
2. "GSN: IAEA Security Official Seeks More Money to Prevent Nuclear Terrorism", *Newsroom America*, August 20, 2012 available at <http://www.newsroomamerica.com/story/271364.html> accessed on 21 Sep 12.

international cooperation is under constant criticism due to the way practical security improvements can be measured as being at a snail's pace.

In the discourse about nuclear terror, a number of steps need to be arranged properly: in terms of amplifying strategic calculations, setting socio-political agendas for use, acquiring material and tool-kits, exercising technology, maintaining tight and secret channels, adequate financial arrangements, preparing a delivery system, and so on. Therefore, as a multi-dimensional subject, nuclear terrorism invites various perspectives and academic analyses. Terrorism study and nuclear proliferation research cover nuclear terrorism in their main domains. Each of them suggests different assumptions and logics providing key components for the risk-policing of nuclear terror and exploring various implications. These two study areas further interact with other areas, such as criminology, economics and intelligence, in discovering the missing points of nuclear terrorism. Noticeably, it is important to produce the accepted array of knowledge by a combined understanding of the subject for the groundwork of creating an effective policy against nuclear terror. This paper attempts to analyse how the single phenomenon of nuclear terrorism has far reaching implications for multiple dimensions and of an interdisciplinary approach is appropriate to enquire to decode its various dimensions.

AN OVERVIEW

Largely, the definition, method, and the potential types of nuclear terror are elaborated in a consensual manner. Ferguson and Potter encompasses various contours of nuclear terrorism as³:

- *The theft, or illicit purchase, of an intact nuclear weapon from a national arsenal and its detonation*
- *The theft or illicit purchase of fissile material to make and detonate an improvised nuclear device (IND)*
- *Attacks on, or the sabotage of, either civil or military nuclear facilities, such as power reactors or spent fuel ponds to release radioactivity*

3. Wyn Q. Bowen, Matthew Cottee and Christopher Hobbs (2012), "Multilateral Cooperation and the Prevention of Nuclear Terrorism: Pragmatism over Idealism", *International affairs* 88(2), pp. 354-358.

- *The theft, or illicit purchase, of non-nuclear radioactive materials to make and detonate a radiological dispersion device (RDD) or to make and deploy a radiation emission device (RED)*

Nuclear Terror Antecedents

In the 1960s, the concept of terrorism was almost denied as Robert McNamara, the former Secretary of Defense of the U.S., declined to use the terminology, 'terrorist'.⁴ During the 1970s and 1980s, less attention was paid to defining the actors; the possibility of nuclear terrorism was perceived as a non-national risk; a part of the state-level proliferation problem.⁵ The probable actors were not exactly mentioned as terrorist groups during this time, rather they were illustrated to a large extent by all groups: "insurgents, guerrillas, extremists or dissident groups".⁶ In 1976, the Central Intelligence Agency (CIA) attempted to designate the key characteristics of transnational terrorist group in terms of their number, networking, violent actions, intensity and the nature⁷ However, the rough conceptualisation of the actors was yet to be clear and the possible scenarios were vaguely drawn when these actors could only acquire nuclear capability as a gift in exchange for bribery from states plagued by corruption.⁸ Most of the probable scenarios pictured by the Pentagon were linked to the Cold War such as; the U.S was exposed to vulnerability such as when the Soviets or Chinese would provide tactical nuclear weapon (TNWs) to the Vietcong.⁹

In the 1990s, with concerns over the disintegration of the Soviet Union, the probability of nuclear terrorism was triggered by the loose-nuke issue. In the observation of scattered non-state actors, newly independent republics in the Black Sea region, Middle East and Eastern Europe were inferred to be highly volatile areas for nuclear smuggling chains coping

4. Micha Zenko (2006), "Intelligence Estimates of Nuclear Terrorism", *The ANNALS of the American Academy of Political and Social Science*, 607, p.93.

5. Thomas C. Schelling (1982), "Thinking about Nuclear Terrorism", *International Security* 6(4), p. 62.

6. Micha Zenko, n.4, p.93.

7. David L. Milbank (1976), "International and Transnational Terrorism: Diagnosis and Prognosis", *Central Intelligence Agency Research Study*, April 1976, p.1.

8. n. 5.

9. Micha Zenko, n.4, p.93.

The increasing quantity of nuclear material, for civilian and military use, has also been a major focus in predicting the risk of nuclear terror

with terrorists, rebels, and criminals.¹⁰ U.S. intelligence revealed a nuclear smuggling root in 1993; Al Qaida attempted to acquire weapon-grade nuclear materials from former Soviet republics and through Sudanese military officers.¹¹ During this time, while pessimism prevailed on nuclear risks leaking from the former USSR, it was believed that the risk of nuclear terrorism was less incurred by leakage from state-terrorist trading. Rather, there was a widespread understanding that the risk existed at the group or personal level as well, as shown from the A. Q. Khan network, with criminal involvement that had previously been overlooked.¹²

Since 2001, after the striking incident of 9/11, Al Qaida and the Taliban have been placed at the forefront of discussions about nuclear terrorism with global terrorists and criminal networks. The WINPAC report, produced in 2001, stated that Osama bin Laden's access to nuclear scientists had involved Pakistan's nuclear program prior to 9/11.¹³ The surprising scale of terrorist strategies using other Weapons of Mass Destruction (WMDs) and the abruptly increasing number of terrorist groups are largely contained in calculating the risk of nuclear terrorism until now.

Simultaneously, the increasing quantity of nuclear material, for civilian and military use, has also been a major focus in predicting the risk of nuclear terror. While only nine states have achieved nuclear weapons capability, there has been more focus on the nuclear materials and civilian use of nuclear facilities for nuclear theft and sabotage. Including the radioactive material to produce dirty bombs, the calculation of the risk is obsessively increased further as it is seen that the theft of nuclear material or sabotage of nuclear facilities would provide more chances to terrorist groups.

Overall, with the observation of historic notes, optimists tend to

10. Maj. Gen. Bruce Lawlor (ret.) (2011), "The Black Sea: Center of the Nuclear Black Market", *Bulletin of the Atomic Scientist*, 67(6). pp.73-80.

11. Micha Zenko, n.4, p.93.

12. Stephen Sloan, (2002), "Meeting the Terrorist Threat: The localization of Counter Terrorism Intelligence", *Police Practice and Research*, 3(4), pp. 337-338.

13. WINPAC report (2001), November 23, 2001. WMD commission pp. 271, 277.

conclude that nuclear terror is nearly impossible.¹⁴ Extensive nuclear literature supporting this opinion assumes the low chance of nuclear terrorism in terms of technological and material accessibility aspects despite terrorists' interest. However, the conventionalists warn that the threat of nuclear terrorism is not minuscule; it is matter of "when, not if".¹⁵

CLAIMS FOR SOME CLARIFICATIONS

The understanding of the risk of nuclear terror is fraught with altercations about different methodologies; qualitative or quantitative analysis. It needs to be corrected in some portions, when many have quoted the risks of nuclear terrorism from one to another blindly.

In the middle of the discussion of the risks of nuclear terrorism, some offer to clarify implausible arguments spread across much literature. Often, the perils of fissile material proliferation are predominantly discussed within the risks of nuclear terrorism, related to the amount of fissile materials stored over thirty-two countries.¹⁶ Placing the multiple uses of these materials, like highly enriched uranium (HEU) and plutonium (Pu), scholars frequently convey the confusion in their writing that more stockpiles bring more risks. Until the late 1990s, this view was blindly accepted in much writing with the heightened concern over the lax security culture and increasing criminal involvement around the world. However, as statistical analysis begun to be used in studying the lineage of nuclear proliferation and terrorism, it started to correct some overrated speculations. Recently, much effort in

Understanding of the risk of nuclear terror is fraught with altercations about different methodologies; qualitative or quantitative analysis. It needs to be corrected in some portions

14. Nathan Busch (2010), "Risk of Nuclear Terror: Vulnerabilities to Theft and Sabotage at Nuclear Weapons Facilities", *Contemporary Security Policy*, 23(3), p. 20. Morten Bremer Maerli, Annette Schaper, and Frank Barnaby (2003), "The Characteristics of Nuclear Terrorist Weapons", *American Behavioral Scientists*, 46(6), p. 728., Todd Masse (2010), "Nuclear Terrorism Redux: Conventionalists, Skeptics, and the Margin of Safety", *Orbis* 54(2), pp.302-319.

15. Todd Masse (2010), "Nuclear Terrorism Redux: Conventionalists, Skeptics, and the Margin of Safety", *Orbis* 54(2), p.302.

16. NTI Nuclear Materials Security Index, January 2012, The Nuclear Threat initiative.

The probability of operating a nuclear attack or theft in some countries is higher than in other countries

statistical analysis emphasises that one must not exaggerate the risk of leaking weapon-usable nuclear materials by saying that large quantities of nuclear stockpiles result in a high probability of nuclear theft. Indeed, it does not matter what quantities are stored, whether enough to make ten bombs or a hundred bombs, but it matters where and how much it will cost for terrorist groups to acquire it. Ostensibly, it is said, “[the] total quantity of nuclear material is not a good indicator of theft risks”.¹⁷

Another falsification can be clarified by using both methodologies to link the risk of nuclear terror and state-sponsored terrorism. Specifically, it is a main issue whether the correlation between the risk of nuclear terror and nuclear states outside the Nuclear Non-proliferation Treaty (NPT) regime is positive or not. Broadly, Iran, North Korea and Pakistan are frequently mentioned with the same level of concern drawing illicit nuclear activity to terrorist groups in the future. Iran, positioned in controversy, is frequently referred to as one of the most dangerous states garnered to its nuclear aspiration and links with terrorist groups. North Korea is also mentioned as a rogue state by historical records of nuclear proliferation and a symbolic implication of loopholes in the nuclear non-proliferation regime. Pakistan, currently one of the highlighted states, mostly because of concerns over the tracing of nuclear proliferation and state-sponsored terrorism, causes worries that it is an unpredictable nuclear holder in the nuclear terrorism scenario.¹⁸ Overall, it is true that all these states are in a stalemate in international politics, so that they may seek non-state actors for third party cooperation to overcome hardships. However, it is invalid to see these states at the same level of diplomatic and military strategies needed to deal with terrorists.

According to Daniel Byman (2007), the probability of operating a nuclear

17. Matthew Bunn (2006), “A Mathematical Model of the Risk of Nuclear Terrorism,” *The ANNALS of the American Academy of Political and Social Science* 607, September 2006, p.113.

18. *The Economist*, 23 August 2012.

attack or theft in some countries is higher than in other countries.¹⁹ Nuclear weapon states can be categorised into three level; high, medium and low in their classification of security capacity, corruption levels and terrorist penetration risk. All those factors combined provide an analysis of the supply-side of leakage characteristics of nuclear weapon states. While two states like Iran and North Korea stay at a medium-level risk over invoking the risk of nuclear terror, Pakistan is shown to be an extremely unsafe state for nuclear leakage in combination with high levels of corruption and terrorist penetration risk.

Table 1. Leakage Characteristics of Nuclear Weapons State

Iran ²⁰	Medium	Medium	Medium	Medium
DPRK	High	Medium	Low	Medium
Pakistan	Medium	High	High	High

Source: partially extracted from Daniel Byman (2007), "Do Counterproliferation and Counterterrorism Go Together?", *Political Science Quarterly* 122(1), p.36

Another careful test is needed to examine the risk of nuclear terrorism in measuring capability among large numbers of terrorist groups. Currently, fifty one Foreign Terrorist Organisations (FTOs) are registered in the bureau of counterterrorism, within the U.S. Department of State.²¹ Forty-eight international terrorist organisations are enlisted under the Terrorism Act 2000 in the UK.²² Australia has elicited seventeen terrorist groups to accomplish effective counter-terrorism measurements with a singular

19. Daniel Byman (2007), "Do Counterproliferation and Counterterrorism Go Together?", *Political Science Quarterly* 122(1), pp.35-37.

20. Iran, not a nuclear weapon state, is included as many pay attention to Iran's current nuclear programme in regard to a nuclear and terrorism nexus. Daniel Byman (2007), "Do Counterproliferation and Counterterrorism Go Together?", *Political Science Quarterly* 122(1), p. 36.

21. "Foreign Terrorist Organizations", Bureau of Counterterrorism, U.S. Department of State, January 27, 2012. available at <http://www.state.gov/j/ct/rls/other/des/123085.htm> accessed on 12 Sep 12.

22. "Proscribed Terrorist Organisations", Home Office, United Kingdom, pp. 1-7, available at <http://www.homeoffice.gov.uk/publications/counter-terrorism/proscribed-terror-groups/proscribed-groups?view=Binary> accessed o 10 Oct 12.

standard.²³ While many agree on the risk of nuclear terror, especially by Al Qaida, there is lack of analysis based on cross-tabulation research. Perhaps, it is owing to the lack of accessing and sharing information and the different threat perceptions that states face. As is also seen in the report provided by United Nations Monitoring Group on Al-Qaida and Taliban (1267 Sanctions Committee), terrorist capability for nuclear terrorism tends to be explained in narrative, as it is also in intelligence estimation.²⁴ Therefore, academic research generally borrowed from official reports tends to carelessly exaggerate the risk, such as quoting a leader's comment on terrorist strategies on WMDs. This hinders the cost-effectiveness approach for the next step in the prevention of nuclear terrorism.

According to those who advocate a cost-effectiveness approach in establishing the prevention of nuclear terrorism, the investment in security measures against nuclear terrorism should be distributed when and where necessary. Seeing that each government faces the difficulty of budget allocation for the prevention of the terrorism with WMDs, security measures need to seek efficiency, as it impossible to extend the measures in an unlimited way. For this reason, the interdisciplinary approach on nuclear terrorism is imperative to improve the efficiency of risk-policing.

DISCUSSING NUCLEAR TERRORISM

In general, nuclear terrorism is explored in subfields of terrorism study, broadly in security studies, and largely in international relations. Accordingly, the multi-dimensional aspects of nuclear terrorism are studied in terrorism studies, nuclear proliferation research, criminology, economics, military study and so on. These provide the different aspects that explain nuclear terrorism that are valuable in establishing micro-level risk-policing against

23. "Listing of Terrorist Organisations", Australian National Security, Australian Government, available at http://www.nationalsecurity.gov.au/agd/WWW/NationalSecurity.nsf/Page/What_Governments_are_doingListing_of_Terrorism_Organisations accessed on 15 Oct 12.

24. United Nations Security Council, Letter dated 18 September 2006 from the Chairman of the Security Council Committee established pursuant to resolution 1267 (1999) concerning Al-Qaida and the Taliban and associated individuals and entities addressed to the President of the Security Council, September 20, 2006, S/2006/750 available at <http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N06/529/76/PDF/N0652976.pdf?OpenElement>.

nuclear terrorism. In the glimpse of nuclear terrorism, different aspects of diagnosis and prognosis are spread across different study areas and interact. Noticeably, many details diverge due to different logics that need to be combined for further research and more effective security measures.

MOTIVATIONS AND STRATEGIC CALCULATIONS

Until now, terrorist groups' motivations of for acquiring nuclear capability differ considerably. In general, in searching for the causes and consequences in terrorism, there is a common acceptance that terrorism needs to be understood by its intentional or circumstantial characteristics, not by the violent act itself.²⁵ In terrorism research, many agree that the perception parameters for nuclear terror seem to play a critical role that strategic consideration of nuclear terrorism is created and fuelled by terrorist leaders or groups, in justifying ideological rationalisation and strategic calculations. Many in terrorism research state that nuclear terrorism, a part of WMD terror (e.g. chemical, biological, radiological, nuclear and high-yield explosives (CBRNE) terrorism), is a sub-strategic practice of terrorism tactics driven by "hatred, fanaticism, ideological or religious extremism".²⁶ If correct, then nuclear terrorism cannot be distinguished from other terrorism motivations. Moreover, the strategic position of nuclear terrorism can be compared to the other tactics of terrorism.

International Terrorism: The Attributes of Terrorist Events (ITERATE) data set (1968-2008), composed by Walter Enders and Todd Sandler (2012), provides the general pattern of terror.²⁷ As the survey points out, all terrorist tactics are categorised into twenty-five types of actions varying from the simple and conventional ways of causing damage to CBRNE terrorism. Generally, bombing tactics constitute a major portion of all terrorist tactics, yet a nuclear-related attack is found to have only happened once in the total of 13,181 terrorist incidents. All-purpose tactics, or general tactics envisaged

25. Richard Jackson (2009), "Knowledge, Power and Politics in the Study of Political Terrorism" in Richard Jackson, Marie Breen Smyth and Jeroen Gunning (eds.), (2009), *Critical Terrorism Study*, New York: Routledge, pp.66-84.

26. Ibid.

27. Walter Enders and Todd Sandler (2012), *The Political Economy of Terrorism*, New York: Cambridge University Press. pp.61-102.

Motivation and strategic calculation of nuclear terrorism varies on how to perceive the characteristics of the actors strategic benefits only by the costs (of security and finance) and effects, despite general terrorism being seen to be boosted

by terrorists tend more towards conventional ways of damaging the target (e.g., purported Weapons of Mass Effect, or WMEs) rather than utilising a nuclear-related weapon which requires a great deal of delicacy. Based on the statistical analysis, one may easily say that the strategic benefit analysis of nuclear terror has less valid in pursuing the complicated discourse of nuclear terrorism preparedness. Simply put, nuclear terrorism costs too much to serve the terrorist aim.

In approaching cost-effectiveness method, logically, the cost of terrorism should not exceed the capability of terrorist groups.

If it is overburdened, the group may collapse. It is called risk-averse calculation²⁸, that the strategy of nuclear terrorism is considered within the margin of cost-affordability. According to this view, the tactics, whether to use conventional skills or WMDs, must help terrorist groups to survive successfully even after they fail to conduct terrorism properly. It is widely supported in nuclear proliferation research, among sceptics in particular, saying that terrorist groups might be willing to be conservative to way in nuclear terrorism path.

However, there is a debate within these studies about whether to set terrorist leaders or groups as rational actors or not to apply cost-effectiveness approach. Since nuclear proliferation research emanated from the realist school, the motivation and strategic calculation of nuclear terrorism varies on how to perceive the characteristics of the actors. According to rational choice theory from the realist school, terrorist leaders will calculate strategic benefits only by the costs (of security and finance) and effects, despite general terrorism being seen to be boosted by religious and ideological motives.

28. According to Michael Levi, "Risk-Averse describes one who chooses an option with less risk failure or of retaliation over an option with more risk of failure or retaliation", Michael Levi (2007), *On Nuclear Terrorism*, Massachusetts: Harvard University Press, p.171.

The assumptions of rational choice theory in terrorists are accepted in criminology as well, extending the view of more participants involved in nuclear terrorism. As a part of the process of nuclear terror, the organised crime within illicit nuclear trade must have occurred between heterogenic criminal groups or individuals. Tracing Al Qaida's global illicit trade to access nuclear materials, criminology states that terrorist groups need to maintain networks with criminals by offering a picture of cost-benefit.²⁹ Even apart from the Al Qaida network, the lower level of illicit trafficking of nuclear materials is even more complicated within the larger range of smuggling patterns. According to the case study of Chelyabinsk Oblast on nuclear smuggling, it is presumed that a multitude of ill-intentioned groups or personnel were broadly layered and approximately eleven different operators were involved.³⁰

Unlike individual-level crime, the actors are participating in a more risky mission like trading nuclear materials, or helping to access nuclear facilities. In criminology, while sharing the information about costs, benefits and the probability of punishment, perhaps religious motivation or regime types may hardly matter for criminal groups, both offences and offenders participated in criminal activity in local area. It infers that the final decision-making to operate nuclear terror must be determined by the top leader of a terrorist group; however, it cannot be asserted that nuclear terrorism is all religious and ideology driven.

Dealing with risk-averse calculations in other two studies, criminology agrees that it is one of the essential parts for sustaining and managing a group. As a priority, reducing conflict of interest, not only at group-level but also at individual amplifies the scope of group management. For survival, it is important to keep an eye on screening mechanisms such as auditing lost money, scrutinising moral hazards in a criminal network and maintaining a carrot-and-stick strategy for compensation. Therefore, criminal experts

29. Lyudmila Zaitseva (2007), "Organized Crime, Terrorism and Nuclear Trafficking", *Strategic Insights*.

30. Robert Orttung and Louise Shelly (2005), "Linkages between Terrorist and Organized Crime Groups in Nuclear Smuggling: A Case Study of Chelyabinsk Oblast", *PONARS Policy Memo*, No. 392. pp.162-163.

constantly raise overlooked questions that the heterogeneity of terrorist-criminal collaboration that would meet and challenge can bring chance to suppress nuclear terrorism.³¹

In economics, the strategic calculation of terrorists is considered to be derived from 'modeling the cost of nuclear terrorism'.³² Despite its exclusion of factors such as political and religious agenda that drive nuclear terrorism, the 'cost per casualty' model considerably assumes terrorist expense to some extent. Therefore, the model is helpful in establishing risk-policing on the prevention of nuclear terrorism. In strategy studies, some researchers argue that the cost of acquiring nuclear capability and the mass casualty it causes heavily weigh with its deterrent effect. However, the economic approach requires that a comparable, exact amount of building-up nuclear capability should be determined, such as the calculation of terrorists on the cost per casualty. According to this argument, the probable scenario of nuclear terrorism may be changed unlike many presupposed scenarios in which terrorists acquire fissile materials and nuclear devices only through transnational trade. They can even proceed to the nuclear development process within the enemy's own territory, such as in the US, for instance.³³

Possibility of State-sponsored nuclear terrorism

Recently, a new trend of discovery on state-sponsored terrorism has been identified, which is that punitive action for state-sponsored terrorism is no longer one-sided. In traditional terrorism studies, state-sponsored terrorism was studied regarding the fact that some terrorist groups have been supported or exploited by states.³⁴ Alternatively, in some cases, it was viewed that state-sponsored terrorism is another form of a state's criminogenic contribution

31. Keith Hayward (2007), "Situational Crime Prevention and its Discontents: Rational Choice Theory versus the 'Culture of Now', *Social Policy & Administration*, 41(3), pp.232-250.

32. Jeffrey G. Lewis (2006), "The Economics of Nuclear Terrorism", FfP Threat Convergence Publications, Fund for Peace (FfP), Washington, DC, United States, p. 3.

33. Jeffrey G. Lewis (2006), "The Economics of Nuclear Terrorism", FfP Threat Convergence Publications, Fund for Peace (FfP), Washington, DC, United States, pp.1-9.

34. Faruk Ekmekci (2011), "Terrorism as War by other Means: National Security and State Support for Terrorism", *Revista Brasileira de Política Internacional*. 54(1), p. 125.

by proxy.³⁵ Sketching the map of where state-sponsored terrorism is aimed at, the attacks are more frequently demonstrated between on-going inter-state rivalries. According to Justin Conrad (2011), state sponsorship of terrorism is mainly observed between two states who are seeking tactical advantages by using a penetrator's attack as "an alternative to risking full-scale war".³⁶ The bottom-line is that between two or more rival states, state-sponsored terrorism is "a low-cost alternative to war" containing formal strategic deniability.³⁷

Applying nuclear terrorism within the conceptualisation of state-sponsored terrorism, the irregular quality of nuclear terrorism and its probable effectiveness as deterrence is highlighted. During the Cold War, the regular quality of nuclear weapons at state-level had been considered in war plans despite the non-use of the weapons in practice. Later, this view was extended to nuclear terrorism, evolving from the irregular quality of nuclear explosives to be obtained by terrorists.³⁸ From this point of view, as Graham Allison warns, for example, the Iran-Hezbollah linkage might be used to deter Israel's military option against Tehran or the Iranian government might expect Hezbollah to take action on its own against the U.S.³⁹ Alternatively the Pakistani Taliban and North Korea's intention to transfer nuclear weapon or material to a third party is in question. In terrorism studies, state-sponsored terrorism will be fulfilled when mutual ideological and political benefits meet in a security domain.

However, in nuclear proliferation literature, the possibility of state-sponsored nuclear terrorism was envisaged as part of proliferation, not only in strategic calculations, but also because of economic benefits. Noticing North Korea's case of experiencing economic hardship, some assert that rogue states can provide for or co-operate with the terrorist groups; the

35. Kristian Lasslett (2012), "State Crime by Proxy", *British Journal of Criminology*, 52(4), pp.705-723.

36. Justin Conrad (2011), "Interstate Rivalry and Terrorism: An Unprobed Link", *Journal of Conflict Resolution* 55(4), p.530.

37. Ibid. pp.529-555.

38. John Mark Mattox (2010), "Nuclear Terrorism: The 'Other' Extreme of Irregular Warfare", *Journal of Military Ethics*, 9(2), pp.160-176.

39. Graham Allison (2004), *Nuclear Terrorism: The Ultimate Preventable Catastrophe*, New York: Times Books/Henry Holt, p.36.

highest bidders acquiring weapon-grade nuclear materials to get economic benefits. However, the opposite view refutes that even rogue states may/will not take an offer from a terrorist group as handed-over nuclear explosives and materials are not returnable. In the worst scenario, it can be used for retaliation against the provider. Remembering the intrinsic attribute of terrorist groups, of maintaining their own political path, it is commonly accepted that terrorist groups are too unpredictable to be holders of nuclear material, in case they fail or their network disintegrates.

Interacting with two studies in criminology, a multi-layered terrorist-criminal nexus is in focus on whether or not to strengthen state-sponsored terrorism in nuclear terror. According to the Illicit Trafficking Database (ITDB), criminal interest in highly enriched uranium or plutonium-related incidents grew sixteen times in 2011 compared to 1993.⁴⁰ Most of the cases are for the trade of gram quantities for material samples from unsecured stockpiles. It is assumed that the demand and supply of weapon-usable nuclear material will continue. However, the difficulty is to demonstrate the characteristics of an illegal nuclear market in terms of size and numbers of participants.⁴¹ Organised crime⁴² involving nuclear trafficking is, ordinarily, not a single form of illegal activity. With the expectation of a huge profit margin, criminal involvement is assumed to create a multibillion-dollar market.⁴³ In the Black Sea region, intelligence assumes that an 'unholy alliance' exists in the trading of HEU, with a price of at least 10,000 dollars per gram.⁴⁴ Overall, the demand driven-market is propelled by a population of 'amateur criminals, scam artists, and (on [the] demand side) undercover

40. IAEA Illicit Trafficking Database (ITDB) <http://www-ns.iaea.org/downloads/security/itdb-fact-sheet.pdf>.

41. Ibid.

42. In some literature, the definition of organised crime varies; traditionally, the meaning of organised crime was valid when it contained a corporate structure. Recently, the classical definition has less impact. It encompasses those groups in flexible forms of hierarchical structures as per the criminal objectives or partnerships they engage in. Lyudmila Zaitseva (2007), "Organized Crime, Terrorism and Nuclear Trafficking", *Strategic Insights*, 6(5), available at http://www.kms1.isn.ethz.ch/serviceengine/Files/.../8_zaitsevaAug07.pdf.

43. Maj. Gen. Bruce Lawlor (ret.) (2011), "The Black Sea: Centre of the Nuclear Black Market", *Bulletin of the Atomic Scientists*, 67(6), p. 74.

44. Ibid. p. 76.

police and police decoys'.⁴⁵

Keeping in mind that criminal involvement does not always need to carry the commitment of a political-ideological agenda, it is often reported that buyers and sellers are in a mistrust situation, thereby bringing a risk to terrorist groups that have to overcome each step of the smuggling chain, eventually leading to nuclear terror. Encompassing a large extent of terrorist activity with organised crime, criminal networks provide funds in multiple sources, and help terrorist keeping eyes of vigilance away from the regulations. Presumably, each step of the crime, through legitimate or illicit channels, can strengthen the "operational proficiency" and "logistical goal" of terrorist groups, testing its organisational network and criminal capability.⁴⁶ Nowadays, the implications of state-funded terror result in more complexity and voluntary terrorist criminal networks, such as for financing, are more amplified. Hence, in criminology, the research of the terrorist-criminal nexus is more imperative than that of state-sponsored terrorism, as state-driven nuclear proliferation seems to be less effective than terrorist-criminal synergy.

In criminology, the research of the terrorist-criminal nexus is more imperative than that of state-sponsored terrorism

Interface with other terrorism tactics

Mostly, the potential type and number of designs of nuclear terror are addressed in much literature in a consensual manner. It is focused on the portability and deceptiveness of appearance of explosive devices, regarding the technological accessibility that terrorist groups can afford. Examples are low-yield devices; gun-types of devices or suitcase nukes, or some possibilities of high-yield explosives for nuclear terrorism were abundantly introduced both in terrorism and nuclear proliferation research.⁴⁷

45 Rensselaer Lee (2003), "Nuclear Smuggling: Patterns and Responses," *Parameters*, (Spring 2003), p. 101.

46. John T. Picarelli and Louise I. Shelley (2007), "Organized Crime and Terrorism", in Jeanne K. Giraldo and Harold A. Trinkunas (eds.) (2007), *Terrorism Financing and State Responses*, California: Stanford University Press, pp. 39-55.

47. Michael Levi (2007), *On Nuclear Terrorism*, Massachusetts: Harvard University Press. Also in Morten Bremer Maerli, Annette Schaper, and Frank Barnaby (2003), "The Characteristics of Nuclear Terrorist Weapons", *American Behavioral Scientists*, 46(6), pp. 727-744.

Emphasising the catastrophic consequences of nuclear terrorism, acquiring nuclear material and its fabrication with an adaptive design of the explosive are the main risks.

Exploring the military technology developing with nuclear terrorism in defence science studies; however, another possibility of nuclear terrorism is raised as a part of aerial terrorism tactics. Despite there being no perfect definition of aerial terrorism, it is broadly accepted that airpower, or an aerial platform, is being used to cause air assaults by terrorist groups.⁴⁸ Many warn about terrorists acquiring any kind of aerial platform, bringing a strategic advantage to terrorist groups. At the centre of this discussion is the idea that the risk of nuclear terrorism is predicted to be less preventable if terrorists succeed with both nuclear capability and predominant airpower. For example, among many possibilities on the terrorist wish-list from the cost-effectiveness point of view, Unmanned Aerial Vehicles (UAVs) or Unmanned Combat Aerial Vehicles (UCAVs) are seen as the most viable solutions for carrying WMDs in the future. Dennis Gormley, a senior fellow of the Monterey Institute of International Studies had illustrated in his analysis that the probable consequences will depend on how quickly terrorists acquire such aircraft.⁴⁹

Compared to the terrorist suicide attacks that are most preferred, it is speculated that terrorist groups are interested in such aircraft for a number of reasons; to enhance tactical and practical achievement without sacrificing people; and to decrease the ostensible onus of recruiting and training terrorists, thereby increasing the efficiency of attack. In the 2000s, the trend of terrorist manoeuvres “converting a small airplane into a weapon-carrying UAV” was markedly proved. A Palestinian extremist deployed UAVs loaded with explosives in 2004 and Hezbollah’s successful flight over Israeli territory without interception in 2005 brings more hope to terrorists. However, some refute that it is imaginable in the near future, owing to the

48. Ajay Lele and Archana Mishra (2009), “Aerial Terrorism and the Threat from Unmanned Aerial Vehicles”, *Journal of Defense Studies*, 3(3), pp. 54-65.

49. Dennis Gormley (2005), “Unmanned Air Vehicles as Terror Weapons: Real or Imagined?” Nuclear Threat Initiative, Analysis, July 1, 2005, available at <http://www.nti.org/analysis/articles/unmanned-air-vehicles-terror-weapons/> accessed on 20 Sep 12.

financial and technological difficulties. However, there is little doubt that Al Qaida is also interested in any combination of WMDs with low-flying mini-UAVs or UACVs to intrude into the enemy's territory in the long-term.

SYSTEMIC VULNERABILITIES ON RISK-POLICING OF NUCLEAR TERRORISM

At the ground stage, consensual opinions hold that terrorists group like Al Qaida are pining for nuclear parity against enemies, particularly nuclear weapons states. Therefore, security measures for the prevention of nuclear terrorism have always been integrated into concerned states' short- and long-term plans. Specifically, a number of aspects on the risk-policing of nuclear terrorism are laid out as part of concerted efforts against counter-terrorism, counter-proliferation, and prevention of criminal activity. Hence, the prevention of nuclear terrorism is seen as a matter of comprehensively understanding defence systems. An increasing chance of compounding effect based on layered defence⁵⁰ or 'defence-in-depth system'⁵¹ is viewed to be much required to remove the possibility of successive attacks by terrorists. In view of the multi-layered aspects of nuclear terrorism from various studies, the opinions on systemic vulnerabilities against nuclear terrorism suggest a number of issues to be addressed because of policy loopholes.

In the history of nuclear non-proliferation, focus has usually been directed on the risk-policing of nuclear terrorism as a part of concern in nuclear proliferation research. States and non-state actors demonstrate different levels of commitment in dealing with the nuclear proliferation issue. At the state level, the rollback in nuclear proliferation was considered an achievement, with bilateral and multilateral negotiations made to eliminate the need to acquire nuclear weapons in exchange for other

In the history of nuclear non-proliferation, focus has usually been directed on the risk-policing of nuclear terrorism as a part of concern in nuclear proliferation research

50. Michael Levi (2007), *On Nuclear Terrorism*, Harvard University Press: Massachusetts, USA. p. 7.

51. Todd Masse (2010), "Nuclear Terrorism Redux: Conventionalists, Skeptics and the Margin of Safety", *Orbis*, 54(2), p.303.

security or economic incentives, as well as to encourage more states to join the Nuclear Non-proliferation Treaty (NPT).⁵² State-level non-proliferation efforts ostensibly seem to be effective because the actors of the supply and the demand sides are known.

In dealing with terrorism, the elimination of terrorist ambition on nuclear terror through the participation of states involves a number of difficulties. For instance, the NTI report (2012) indicates that a lack of political consensus exists in terms of providing financial resources to secure nuclear materials as a part of nuclear terrorism security measure.⁵³ The financial cooperation of 152 member states to cover the issue has yet to be mandated, whereas the IAEA drew a framework of safeguards, including a list of 15 nuclear materials for civilian use. In the view of nuclear proliferation research, explicit policies are needed in exchange for rewards in the process of architecting global cooperation against nuclear terrorism.⁵⁴ Nuclear proliferation research suggests that the hesitation of states to participate in a unified effort can be addressed through the application of the game theoretic solution.

The hope in this view is that the paradoxical situation, which is widely described as the prisoner's dilemma, can be transformed to a coordination game.⁵⁵ International cooperation at a legal level is weak, thereby necessitating the active participation of states in the prevention of nuclear terrorism. When the realist assumption meets the cost-effectiveness approach, the logic of coordination sets the assumption that more states are willing to perform a joint task if these states can receive a large payoff when they join a group action. Both at the international and domestic levels, risk-policing against nuclear terrorism require in actual practice a solid understanding of tightened policies. Examples are policies on tracking terrorists' money laundering, freezing their assets, refusing them physical

52. Lewis A Dunn (2007), "Countering Proliferation: Insight from past "Wins, Losses, and Draws" in Peter R. Lavoy (ed.), *Nuclear Weapons Proliferation in the Next Decades*, Routledge. pp.47-58.

53. NTI Nuclear Materials Security Index, January 2012, The Nuclear Threat initiative

54. Graham Allison (2008), "Nuclear Deterrence in the Age of Nuclear Terrorism", *Technology Review*, 111(6), p. 73.

55. Walter Enders and Todd Sandler (2012), *The Political Economy of Terrorism*, New York: Cambridge University Press. pp. 61-102.

and ideological protection, sharing intelligence, building up diplomatic networks among parties and establishing mutual policies. However, several limitations persist in terms of coordination, as suggested by various studies on nuclear terrorism.

First, the cost of preventing nuclear terrorism is not consensually agreed upon despite a global understanding of the imperative.⁵⁶ Collective diplomacy and substantial financial investment will certainly diminish the massive threat of nuclear terrorism.⁵⁷ However, little is known regarding when, where, how many assailants, in what way and with what capabilities terrorists will act.⁵⁸ This lack of information hinders when, where, to whom and how investment against nuclear terrorism among states will be made. Terrorism research focuses on determining terrorist groups, nuclear research on nuclear forensics, and criminology on the terrorist–criminal nexus and intelligence analysis on intelligence investment. All of these efforts are imperative, but they are futile if the resources that can be provided by state members are not wisely located.

Second, not all states confront the same levels of terrorism risk, which presupposes their varying levels of commitment.⁵⁹ Therefore, it is a matter of who will share more or less of the costs of destroying terrorist facilities, thwarting financial networks and mechanisms of recruiting scientist and engineers, and deploying nuclear detection systems is difficult to determine.

Third, investment in particular terrorist tactics like nuclear terrorism is also in question. The main argument here is how the greater likelihood of nuclear terrorism over terrorism involving WMDs can be estimated.

56. Graham Allison (), “Nuclear Deterrence in the Age of Nuclear Terrorism”, p. 73.

57. Matthew C. Weinzierl (2004), “The Cost of Living: The Economics of Preventing Nuclear Terrorism”, *The National Interest*, Spring 2004, p. 118.

58. Matthew Bunn (2006), “A Mathematical Model of the Risk of Nuclear Terrorism”, *The ANNALS of the American Academy of Political and Social Science* 607, September 2006, p. 111.

59. Philp Keefer and Norman Loayza (2008), *Terrorism, Economic Development, and Political Openness*, New York: Cambridge University Press. James Goodby, Timothy Coffey, and Cheryl Loeb (2007), “Deploying Nuclear Detection Systems: A Proposed Strategy for Combating Nuclear Terrorism”, Center for Technology and National Security Policy, National Defense University available at <http://www.ndu.edu/CTNSP/docUploaded/DTP%2041%20NuclearDetectionStrategy.pdf>.

Intelligence reforms or constitutional limitations on intelligence hinder determination on proper action that prevent flexibility of terrorism investigation

Discussing budget allocation of nuclear terrorism is one of the essential parts of an evaluation and reward mechanism in governance.

Fourth, in decision-making on prevention of nuclear terrorism as a part of CBRNE terrorism, both domestic and external issues can impinge upon the budget, so that trends of budgets for counter-terrorism are apt to fluctuation of the financial price tag distracted by other internal factors. In Britain, the hosting of the Olympic game drew the three national agencies' bids for counter-terrorism funding down.⁶⁰ In Indonesia, it was announced that the National Counter-Terrorism Agency (BNPT) will cut its budgetary expense derived from the evaluation report on the question of whether it is worth investing, considering past performance.⁶¹ As Indonesia sees, the asymmetrical expenses of nuclear forensics in the world vary risk-policing.

Fifth, the sharing of intelligence information across the world is a one of core concern in terms of handling first-hand information to be used for an issue-based design of nuclear terrorism. Unfortunately, the obtainment of viable intelligence information is often a conflict point, especially when states claim sovereignty over foreign intelligence efforts.⁶² While usability of intelligence information is wide-ranged, it also raises a number of woes in practice. The role of intelligence in conducting surveillance and collecting data often meets a challenge when it performs against foreign intelligence or criminal acts. Intelligence assessment on nuclear terrorism in particular is vitally related to national security, yet it might cross far

60. "London 2012: Austerity Cuts to Counter-Terrorism Budget Could Hit UK after Olympic Games", *The Huffington Post*, February 7, 2012. http://www.huffingtonpost.co.uk/2012/02/06/london-2012-big-terrorism_n_1258302.html.

61. "Counterterrorism Risks Faltering on Budget Cut", *The Jakarta Post*, June 11, 2012. available at <http://www.thejakartapost.com/news/2012/06/11/counterterrorism-risks-faltering-budget-cut.html>.

62. John Scott (2011), "Confronting" Foreign Intelligence: Crawford Roadblocks to Domestic Terrorism Trials", *The Journal of Criminal Law & Criminology*, 101(3), pp.1039-1079. Stephen Sloan, (2002), "Meeting the Terrorist Threat: The localization of Counter Terrorism Intelligence", *Police Practice and Research*, 3(4), pp. 337-338.

beyond legal boundaries or its original purpose. On the other hand, it is said that intelligence reforms or constitutional limitations on intelligence hinder determination on proper action that prevent flexibility of terrorism investigation.⁶³ It is ongoing discussion of sharing intelligence in domestic and international arenas as it is further complicated by collecting information, in contrast to the compilation by different agencies and nations.⁶⁴

CONCLUSION

The real threat of nuclear terrorism through non-state actors' nuclear proliferation is a primary concern in the international community. While state proliferation can be monitored and sanctioned in a systematic way, nuclear terrorism involves additional factors to ensure domestic and international preparedness. Most states struggle to prevent catastrophic nuclear terror events by implementing unilateral and multilateral risk policing. Fortunately, many see nuclear terror as preventable through securing nuclear material and disrupting technological and criminal networks. Therefore, academics, policy-makers, and the intelligence community keep trying to moderate the defence policy interface using various analyses provided.

It may be true that terrorists that desire the nuclear weapon as an ultimate tool, similar to the state's nuclear pursuits, cannot be stopped due to nuclear states' reluctance toward global nuclear disarmament and the states' desire for advanced nuclear weapons and delivery systems. As long as the symbolic impact of nuclear weapons exists, it is unlikely that terrorists will voluntarily abandon their political goals. Therefore, dealing with nuclear terrorism will cost more and last longer as terrorists' attraction to nuclear terror is not likely to decrease.

Understanding nuclear terrorism requires in-depth and interdisciplinary, long-term analysis. Various studies suggest different approaches to understanding terrorists' motivations and strategic calculations, their desire to potential technical capabilities, and terrorist networks with states and

63. John Scott (2011), "'Confronting" Foreign Intelligence: Crawford Roadblocks to Domestic Terrorism Trials", *The Journal of Criminal Law & Criminology*, 101(3), pp.1039-1079.

64. Stephen Sloan, (2002), "Meeting the Terrorist Threat: The localization of Counter Terrorism Intelligence", *Police Practice and Research*, 3(4), pp. 337-338.

other criminals. Due to the existence of contradictory assumptions and logic regarding nuclear terrorism risk-policing, confusion occurs during policy implementation. In addition, each state faces conflicting situations, which distracts from the establishment of global nuclear governance to prevent nuclear terrorism. The need to face the threat of nuclear terrorism has been sufficiently emphasised, but progress is still far from practical forward movement.

To prevent nuclear terror more effectively, non-nuclear tools combined with a nuclear nonproliferation approach are imperative. While some argue the need for military intervention, this intervention should be a last resort. If used, military intervention may delay a terrorist's plan by hindering the key components of the plan in the short-term, but this intervention can lead to the expansion of the terrorist group due to social hatred and religious extremism against the targeting state. History shows that a unilateral approach to nuclear terrorism causes states to resist the establishment of an integrated global consensus on counter-terrorism and nonproliferation regimes. Therefore, the right strategy should be focusing on effective risk-policing by creating a foundation of the global nuclear policy architecture that provides for the mutual benefit of the joint forces.

CLOSURE OF THE STRAIT OF HORMUZ: POSSIBILITIES AND CHALLENGES FOR INDIA

RHEA ABRAHAM

“Let us be master of the strait for six hours and we will be masters of the world.”

— Napoleon Bonaparte (1908)

With the effectiveness and affordability of cost in terms of freight charges and staff, 80 percent of the world’s trade and 60 percent of the world’s oil is transported through the sea, through maritime highways called Sea Lanes of Communication (SLOCs) that help reduce time and aid economic and safe passage for ships and cargos. Current statistics report that the international trade passing through the Indian Ocean mainly through the Strait of Hormuz and the Strait of Malacca itself amounts for 1 trillion dollars.¹ The importance of these SLOCs is however attributed to the dependence of the countries on the crude oil from the Persian Gulf which is mainly exported through the Strait of Hormuz and to the east through the Strait of Malacca. These straits do not carry much of commercial or naval shipping but are considered as “chokepoints” due to their strategic and geographic location. These maritime bottlenecks are usually less than

Rhea Abraham is a Research Associate at the Centre for the Air Power Studies, New Delhi.

1. “International trade statistics 2011”, World Trade Organisation, available at www.wto.org/english/res_e/statis_e/its2011_e/its11_toc_e.htm accessed on 12 Sep 12.

Increase in the dependency of energy resources by Asian countries also threatens to lead into a competition or resource war

40 miles wide at their narrowest point². Any threat or impact in the region thus threatens to affect the world economy to a great extent, and can impact the cost and timeliness of transportation of goods through the region. Also, crowded and constrained chokepoints expose shipping to greater risk and a closure may also threaten the sea routes carrying these oil tankers as it will force ships to use longer and more costly alternative passageways. Maritime transportation mainly through the chokepoints is also highly vulnerable to outside risks from state and non state actors including piracy and terrorism. Secondly, most of the strategically important SLOCs and choke points such as the Bab el Mandeb are located near failed states and regions without a strong governance system exposing them to further risks. Recently, the increase in the dependency of energy resources by Asian countries also threatens to lead into a competition or resource war that may restrict each other's maritime presence and ambition in the Indian Ocean Region.³

Thus in the midst of such drastic vulnerabilities and fluctuations, which also include an emerging nuclear Iran in the region of the Indian Ocean, an evaluation of the SLOCs in the Indian Ocean mainly the Strait of Hormuz becomes essential for a country like India as it is dependent on the route for a large part of its national security including its energy security and economy. This article has been written in the wake of naval exercises conducted by Iran in the light of fresh sanctions imposed by the European Union against its nuclear program and a possible gesturing of a closure of the Strait of Hormuz as retaliation in the near future. One can understand that though such a move may be improbable, it nevertheless becomes important to understand any congestion for oil importing countries like India, caused purely by mere expression of a closure of the Strait by regional powers

2. See Captain C. E. Soderholm, *"Indian Maritime Strategy and the Sea lines of communication"* National Defence College (USA: 2005).
3. See Chapman, D., & Khanna, N, *" The Persian Gulf, Global Oil Resources, and International Security"* SUNY (New York: 2004).

such as Iran which if unheeded can be disastrous; as was seen in the rise of world oil prices by 2% in the early month of January this year.⁴ Also, such an exercise helps to understand India's role in the region in terms of its existing capabilities; the extent of its engagement as a maritime regional power with the countries of the Persian Gulf, mainly Iran and its responses to any possible closure in future.

UNDERSTANDING THE STRAIT OF HORMUZ

Oil which is primarily produced in the region of West Asia is transported from the Persian Gulf to countries of Europe, North America, and Asia. These regions hold 62 percent of the world's proven liquid reserves and 31 percent of the available crude oil.⁵ In 2000, the Persian Gulf alone produced 28 percent of the world's oil which is expected to rise to 35 percent in 2020, and about 26 percent of the world's global natural gas reserves⁶. The countries of the Persian Gulf namely Bahrain, Iraq, Iran, Kuwait, Qatar, Saudi Arabia and the United Arab Emirates in total produce two-thirds of the world's proven oil reserves and 90 percent of the excess capacity⁷, which gives them the ability to meet future oil demands of the world. About 18 percent of U.S oil imports, 20 percent of Western Europe and 80 percent of Japan's total oil imports are imported from the Persian Gulf, out of which about 93 percent of oil is exported by tanker through the Strait of Hormuz⁸. In fact, the Strait of Hormuz remains the only waterway connecting the Ocean to the energy resources of the Persian Gulf and therefore, keeping the Strait open becomes vital not only to regional producers and Western energy consumers such as

4. Ashwath Komath, "The Crisis in The Strait of Hormuz and How It Affects India", Newsflavour, February 10, 2012, available at <http://newsflavor.com/politics/international-relations/the-crisis-in-the-strait-of-hormuz-and-how-it-affects-india/#ixzz24GgJdfvL> accessed on 15 Oct 12.

5. See "Global Oil Choke Points: How Vulnerable Is the Global Oil Market?" Lehman Brothers(UK: 2008).

6. "Freedom to use the Seas: India's maritime military strategy" Ministry of Defence (New Delhi : May 2007).

7. Bernard D Cole, " Sea lanes and pipelines- Energy Security in Asia" (Praeger Security International, USA: 2008).

8. Mihir Roy, "Maritime Security in the Indian Ocean, Society for Indian Ocean Studies, (India: 2010), available at www.iips.org/Roy-paper.pdf.

Strait of Hormuz by far remains the world's most important oil choke point, with an estimated 15.5 million barrels of oil flowing through it per day

the United States, Europe, Japan and Australia, but to the world economy in general.

The Strait of Hormuz geographically is a narrow waterway between the Gulf of Oman in the southeast and the Persian Gulf in the southwest which forms a vital node in world energy trade. Contributing as a major waterway during the Second World War in terms of centrality of conflict and competition, the Strait of Hormuz continues to be the neck of geopolitics in the present security environment as its remains volatile, politically unstable and a major operational centre in military strategy. The Strait contains 8 major islands, 7 of which are mostly controlled by Iran namely Hormuz, Larak, Qeshm, Hengam, Abu Musa and the Tunb Islands. However, amongst the islands, the UAE and Iran continue to disagree over the Abu Musa Islands, Greater and lesser Tunb Islands for strategic reasons. Iran also has been promoting a military presence in the region since the 1970s and controls the Strait through the Bandar Abbas, Chahbahar and Bushehr ports.⁹

The Strait of Hormuz by far remains the world's most important oil choke point, with an estimated 15.5 million barrels of oil flowing through it per day,¹⁰ which is roughly 25 per cent of the world's daily oil production.¹¹ An additional 2 million barrels of oil products, including fuel oil, are exported through the passage daily as well as liquefied natural gas. Exports from the world's largest liquefied natural gas exporter Qatar also pass through the Strait to Asia and Europe. Oil exports through the Strait of Hormuz are said to double to 30 million barrels per day by 2020.¹² Most of the crude exported through the Strait travels long distances by Very Large Crude Carriers (VLCC) which can carry over two million barrels of oil per voyage.

9. See Dagobert Brito and Amy Myers Jaffe, "Reducing vulnerability of the Strait of Hormuz" in Henry Sokolski and Patrick Clawson, *Getting Ready for a nuclear Iran*, (Strategic Studies Institute, USA: 2005).

10. See A R Tandon, "India and the Indian Ocean" in K N Nayyar (ed.), *Maritime India*, (Rupa and Co, India : 2005).

11. See Vrushal Ghoble, "Maritime energy security and Hormuz & Malacca straits" *Think India Quarterly*, (Vichar Nyas foundation, India: 2009).

12. See "Gulf oil and gas- ensuring economic security" ECSSR (UAE: 2007).

In order to regulate the movement of large ships in these constrained waters, the United Nation's International Maritime Organization has recognised a Traffic Separation Scheme (TSS) for the region. The TSS consists of two-mile wide shipping lanes: one for incoming traffic and one for outgoing traffic. These two shipping lanes are separated by a two-mile buffer zone. It is therefore a complex network with the narrowest point being 21 miles wide. The two shipping lanes, separated by a buffer zone are located inside Omani territorial waters. Closure of the Strait of Hormuz would thus require use of alternate pipeline routes at increased transportation costs. However, much of the vulnerability for western consumers has been reduced in the present day, by two giant pipelines called the East West pipeline constructed to Yanbu, in Saudi Arabia, which provides an outlet in the Red Sea.¹³ Also, other alternate routes available for oil exports from the Strait of Hormuz which are feasible include routes via Iraq that take oil to the Mediterranean Sea and via UAE to the Persian Gulf.

CHALLENGES IN THE REGION

Maritime rivalries in the Indian Ocean are an early indicator of the return of great-power politics to the limelight of the international arena. The Indian Ocean is fast becoming a region for great-power relations between the US, China and India. Even as China and India harbour ambitions to expand their forward naval presence in the Indian Ocean, and encourage their strategic interests, there seems a threat of a potential source of future conflict; but it also implies that these emerging powers are starting to come together and shoulder some of the responsibilities for maintaining the safety of the Ocean's SLOCs.¹⁴

US-Iran competition

The biggest challenge in the region continues to be the ongoing American-Iranian rivalry that has its roots embedded in history and one that promises everlasting consequences, despite the enormous geo-economic and

13. See Gal Luft, "Choke point", *Foreign Policy*, (Taylor&Francis,USA: 2012).

14. Gulshan Diel, "New Threats to Oil and Gas in West Asia:Issues in India's energy security" *Strategic Analysis*, (IDSA, Delhi: 2004).

geostrategic stakes that the United States has in the region. For the US; Iran, terrorism and terrorist-related smuggling are big problems in the Gulf region as US forces struggle to contain growing violence in regions of Iraq and Afghanistan¹⁵. Iran's rise as a regional power led by a militant Shiite theocracy has been challenging long established Sunni-Arab regimes in and around the Gulf. Meanwhile, the US and its ally, Israel, are determined to try to stop Iran from following North Korea and developing nuclear weapons at any cost including the strengthening of its presence in the Strait of Hormuz. US officials, along with the European Union have been tightening financial sanctions on Iran and have been openly accusing Iran of dangerous ambitions in the region. Two US aircraft carriers including USS Abraham Lincoln and USS Enterprise, and associated warships have been deployed in or close to the Persian Gulf, raising concerns that tensions with Iran could result in a military conflict between the two long-time adversaries. In the same region, Oman and the UAE are among the key U.S. allies. The United States supplies both countries with most of their arms purchases, including advanced fighter aircrafts such as the F-15 and F-16¹⁶. In addition, the United States has maintained a naval carrier task force in the Persian Gulf area, mainly the fifth fleet in Bahrain, thereby increasing US-Iran tensions in the current context.

In retaliation to such great power politics, Iran aims to impede traffic through the strategic waterway if the United States resorts to military action and further sanctions against the Islamic Republic over its disputed nuclear programme, which includes measures such as closure of the Strait, deployment of naval capabilities, mines and overall strategic posturing. Iran has promised to respond to an attack by disrupting oil flows and closing the Strait through its military capabilities, which would increase the price of oil. The Iranians have bought surface to surface missiles from the Chinese and small submarines¹⁷ from North Korea that can sink tankers in the Strait. In November 2011, Iran conducted exercises that saw the testing of air defence

15. n. 1.

16. n. 5.

17. Bassam Fattouh, *"How secure are middle east supplies"* Oxford Institute for Energy studies (UK: 2007).

missile systems. Naval capabilities termed Velayat 90 showcased Iran's shore launched anti- shipping missiles such as Qader and Nour, minelayers and Special Forces¹⁸.

Understanding the situation, the Iranians move to close the strait in the midst of existing nuclear tensions in the region would have a very huge impact on the oil trade and a possible re-flagging of the tanker traffic by the United States. Western naval power could provoke an Iranian naval attack on the oil traffic in the region affecting both the tanker traffic and may even engage in a submarine warfare that could block the strait's physical access. Oil tankers could still be forced to use high-risk SLOCs, which would result in very high insurance premiums, levying an additional surcharge of up to 0.10 percent of the total value of their cargo, while the baseline insurance premium imposed on seaborne freight will be 0.05 percent¹⁹. During the Iran-Iraq war of 1980-88, there were attacks on tankers that resulted in a reduction in tanker traffic through the Gulf. In this never ending contention, Iran has opened new naval facilities east of the Strait of Hormuz, the narrow entrance to the Gulf which is the key to oil supplies and would enable Iran to block the entry of anyone into the Gulf. The navigable tanker lanes are only six miles wide and any disruption could severely hit the oil supplies from the Gulf. Iran, Oil Producing and Exporting Countries' (OPEC) second largest crude oil producer, also threatened shipping in the Persian Gulf on a number of occasions and used mines in their operations. During the "Tanker War" phase of the Iran-Iraq War, Iran laid a number of naval mines in the Persian Gulf, one of which struck the USS 'Samuel B. Roberts', a patrolling United States guided missile frigate, resulting in the death of over 30 crewmembers. While the incident did not sink the vessel, it demonstrated the vulnerability of shipping to mine damage. In January 2008, Iranian Revolutionary Guard boats²⁰ provoked three US Navy ships in the Strait of Hormuz. In March 2007 there were concerns of an Iranian

18. David Michel and Russell Sticklor, " Indian Ocean rising : maritime security and policy challenges" Stimson Center (USA : July 2012).

19. Leighton G. Luke, "Closing the Strait of Hormuz – An Ace up the Sleeve or an Own Goal?" Indian Ocean Research Programme Report (Future Directions International, Australia: 2009).

20. Barbara Starr, " Iranian boats harass US Navy, officials say", CNN , January 7, 2008.

attack on a U.S. vessel or vice versa and thus in the falling month; the United States undertook the largest naval exercises in the Persian Gulf. Also, recently, the US announced that it would send more warships and US navy minesweepers for exercise in the Gulf, which will be joined by around 20 US allied countries²¹ in September, 2012. The US Navy has also brought in a converted amphibious transport and docking ship named the Ponce, into the Persian Gulf to serve as the first floating staging base for any kind of operations including military and non-military such as mine clearing.²²

However, such measures taken by Iran, would affect the global consumers at large, the worst hit would be the Gulf States, unable to export their oil and their main source of income would come to an end. For Saudi Arabia, the losses would amount to 70 per cent to 80 per cent of its revenues²³ Qatar would lose 60 per cent of its revenues and Oman, 40 per cent of its Gross Domestic Product. For Iraq, the losses would represent 40 per cent of the State's income. The Iranians themselves would be the worst affected as they would be unable to import the refined petrol they need. Iran consumes a good fraction of its own production, so it exports only amount to a few million barrels a day. The type of crude that Iran exports, is substitutable with the capacity from elsewhere in the world, mainly Saudi Arabia; but, in case the Strait is closed and the access to the world's markets for Saudi Arabia's oil ports are hindered due to an attack, some six to nine million barrels per day will be taken off the global market, leading to an overnight oil price hike. Within weeks the country would see food shortages, mass unemployment and an internal conflict.²⁴

UAE-Iran competition

Also, there exists the ongoing dispute between Iran and UAE over ownership of three islands near the tanker routes to the Strait of Hormuz, i.e. Abu Musa, Greater and Lesser Tunb Islands. In case of a disruption in these

21. Michael Casey, "USS Porter damaged in collision with oil tanker near Strait of Hormuz", National Post August 13, 2012.

22. Thom Shanker, Eric Schmitt and David E Sanger, "U.S. Adds Forces in Persian Gulf, a Signal to Iran", the New York Times, July 3, 2012.

23. See Kenneth M. Pollack, "Securing The Gulf," *Foreign Affairs*, July 2003.

24. Ibid.

islands, the oil prices would hike up. Bander Abbas, a military port just off the Strait and its military bases surrounds Abu Musa and the two Tunb islands. Abu Musa contains a large deposit of oil and thereby remains of vital importance to both the countries. The island is also located at the mouth of the Strait of Hormuz²⁵ and thereby forms a centre point for control of the strait. Control of Abu Musa provides Iran with protection for its port of Bandar Abbas. The Tunb Islands on the other hand, though inhabitable provide strong defensive bases for the Strait and are apt for conducting any sort of military operations from sea. The islands are also located in the center of the navigation route of the TSS and thereby remain strategic for their control over maritime traffic passing through the Strait of Hormuz. Most importantly, the deep waters around the Islands are suitable for submarine operations and super tankers and thereby can become an excellent base for any future manoeuvre. No substantial official agreement however exists between Iran with UAE over the islands and thereby can instigate a further crisis that may involve international intervention. In retaliation, Iran can always threaten to close the strait. Also the visit of Iranian President to Abu Musa islands recently has flared up issues between the two countries.

In response to this, UAE is studying plans to build a \$200 billion megacanal that would allow oil tankers to bypass the Strait of Hormuz, in order to reduce Iran's influence on the flow of oil from the region.²⁶ There is a construction of a 112-mile canal to the Dubai Government.²⁷ Abu Dhabi has recently inaugurated a pipeline to Fujairah so its oil can avoid Hormuz and will be able to carry about 1.5 million barrels a day of Murban crude from Habshan, a collection point for Abu Dhabi's onshore oil fields, across a desert and mountains to Fujairah. It has been inaugurated with the first export cargo being shipped to a refinery in Pakistan.²⁸ This pipeline however will only import oil from UAE and not other countries such as Qatar and Iraq that are beyond the Strait's entrance.

25. Ashraf Ashrafpour, "Persian Gulf: Geopolitics and Wars" (Kaveri books, India : 2012).

26. Dagobert L Brito, "Revisiting Alternatives to the Strait of Hormuz", James A Baker III institute for public policy (USA: January 2012).

27. n. 2.

28. See Anthony DiPaola and Ayesha Daya, "Abu Dhabi exports first pipeline oil bypassing Hormuz strait", Bloomberg Business Week, July 16, 2012.

Escalating conflict in the Strait of Hormuz and the Gulf Region would be very complex with consequences impacting all the states in the region

Other existing challenges

Therefore, it is important to understand that an escalating conflict in the Strait of Hormuz and the Gulf Region would be very complex with consequences impacting all the states in the region. Thus four critical vulnerabilities would emerge by an escalating conflict in the Strait- The vulnerability of operating International tanker and freight traffic in the Strait of Hormuz region will increase the economy of the world; The vulnerability due to chances of war and possible fall in the International expatriate community in the Gulf region; The vulnerability of collapsing Gulf economies and the rise of oil prices that would increase the remittance economy of the International workforce from the Gulf and the vulnerability that the navies would have to face in order to maintain peace and tranquillity in the Indian Ocean Region (IOR) and the trouble it would need to take to evacuate all expats from the region, in case of a war. A threat on the naval bases and oil facilities will also put the world at risk.²⁹

The growing strategic importance and economic significance of the Strait of Hormuz, combined with its vulnerable position adjacent to failed states, makes it also an attractive target for terrorist groups looking to disrupt global trade. The sinking of only a few ships could seriously affect traffic through the narrow Straits of Hormuz, making them particularly vulnerable to potential actions undertaken by groups such as the Al Qaeda. The Indian Ocean trade routes are also used for the trafficking of drugs, smuggling of people and small arms by international criminal organisations and has emerged as an important transit route for the narcotic trade from the Golden Crescent (Afghanistan, Pakistan, and Iran) to the West and Far East. Regional instability, non-state violence, and potentially armed maritime conflict mainly from Yemen and Pakistan, can threaten to affect the safety of commercial shipping across the Strait of Hormuz. Maritime attacks or closure would cause a relocation of the affected trade flows and

29. n. 21.

reroute sea trade which will make transportation expensive.

Feasibility of Closure

However despite all these challenges, there exists the fact that the possible closure of the strait remains impossible or calamitous due to its vulnerable location. According to the United Nations Convention on the Law of the Seas, the monitoring of warships in the Strait is entitled to unimpeded transit. Therefore according to international law, no country can impose blockage or cause a closure of the Strait of Hormuz.

However the difficulty of stopping Iran relates to the United States not having ratified the UNCLOS and thereby accuses of American presence and control of the region beyond any legal regulations.³⁰ Closure of the strait by sinking vessels would be unfeasible as the depth of the strait is 70-100 m and thereby remains physically ineffective. Also the depth in the Persian Gulf is not suitable for submarine operations.³¹ It is important to note that sea mining in the region has been considerably contained due to latest technological advancements and counter mine vessels. The environment for radar also is not possible due to massive clutter, missed detections and possibility of false targets in the strait. There also exists poor propagation environment for infrared missiles leading to insecure submarines.³² Therefore mostly, closure of the Strait limits itself as part of Iran's defensive deterrence strategy that allows it to control situations in the region and avoid any sort of persecution from rivals.³³ Iran is aware that it will suffer maximum with closure of the strait as the other Persian Gulf countries can divert or deviate their oil export routes. Its heavy

Economic significance of the Strait of Hormuz, combined with its vulnerable position adjacent to failed states, makes it also an attractive target for terrorist groups looking to disrupt global trade

30. Susan Simpson "Is the Strait of Hormuz governed by treaty or by customary international law?", January 7, 2012, available at www.viewfromll2.com accessed on 15 Oct 12.

31. n. 26.

32. Anthony H Cordesman, "Iran. Oil and the Strait of Hormuz" CSIS (USA: 2007).

33. Kayhan Barzegar, "Iran's Strategy in the Strait of Hormuz", *The Diplomat*, July 24, 2012.

India emphasised that Sea Lanes of Communication mainly the Strait of Hormuz, are critical to the country's future economic prosperity

dependence on imported refined products such as gasoline will also be congested with the closure. Also, the military bases around Bandar Abbas will get occupied and damaged in case of air strikes by US and will thereby lead to mismanagement of Iranian imports. Most importantly, any decision on the closure of the Strait can only be issued by the Supreme Commander, Ayatollah Khamenei and not military commanders,³⁴ thereby restricting the effectiveness of the rhetoric. Also, the Strait of Hormuz is partly controlled by Oman which can implement decisions in regard to the issue if necessary.

However, oil crisis in the future can be caused in the region by overconsumption, ageing infrastructure, disruption of freight traffic, impediments at oil refineries and port facilities, restricting fuel supply, pipeline failures and accidents and also changing political events. Also there exist chances of increase in the consequences and participation of a war in the region which will lead to a possible closure of the Strait and its subsequent impact on the people in the region.

INDIA'S HORMUZ DILEMMA AND THE PERSIAN GULF

While understanding the importance of the Strait of Hormuz for the world in general, it is interesting to note that in its 2004 Maritime Doctrine, India named the area between the Persian Gulf and the Strait of Hormuz as a legitimate area of interest. Also, in its 2007 maritime strategy titled 'Freedom to Use the Seas', India emphasised that Sea Lanes of Communication mainly the Strait of Hormuz, are critical to the country's future economic prosperity and that nations around the world depend on the waters of the Indian Ocean for their trade and energy supplies.³⁵ It is also interesting to note that the growing need and dependence of the Indian Ocean has increased the

34. "Iran has plans to close Strait of Hormuz if in trouble", The Times of India, July 7, 2012.

35. Tim Sweijts, Willem Cleven, Mira Levi, Joelle Tabak, Zinzi Speear and Jeroen de Jonge, "The Maritime Future of the Indian Ocean Authors", The Hague Centre for Strategic Studies (Netherlands : April 2011).

role of the Indian Navy in the region, which is expected to ensure stability and tranquillity in the waters around India's shores.

INDIA AND THE PERSIAN GULF

Reiterating the significance, India, the world's fourth largest energy consumer, after the United States, China, and Japan depends on oil for about 31 percent of its energy needs, out of which it imports about 68 percent.³⁶ India's entire development process depends on the availability of energy resources and, therefore, energy availability and affordability becomes absolutely vital to the country. Ninety per cent of our oil comes either from offshore fields or from across the sea, mainly from the Persian Gulf, disruption of which could critically affect the country's interests.³⁷ India's oil consumption is also said to increase to 10 percent per year reaching 3.2 million barrels per day by 2014.³⁸

Apart from energy supply, India's export of goods has also increased to the Persian Gulf countries with increasing engagement in trade of petrochemicals, plastics and raw materials and enhancement of investments in both regions. The Strait of Hormuz has been a critical link in India's trade with the Arab countries of the Persian Gulf, as well as Iran which has also facilitated close economic and cultural ties. The United Arab Emirates remains India's largest non-oil trading partner and continues to expand its partnership with the country on all fronts including education, tourism and healthcare. Most importantly, approximately 6 million Indians work in the six Arab states of the Gulf Cooperation Council and send home more than 9.5 billion dollars in remittances annually,³⁹ making India one of the largest FOREX recipient countries.

Iran remains a strategic rear base for India and an important energy partner. In 2005, India and Iran signed a multibillion dollar deal under which Iran supplies India with 7.5 million tons of Liquefied Natural Gas

36. n. 7.

37. Robert D. Kaplan, "Center Stage for the Twenty-first Century Power Plays in the Indian Ocean", *Foreign Affairs* (USA: 2009), v. 88, n. 2.

38. Saideh Loftian, "Maritime security in Persian Gulf", in Ravi Vohra and Derbrat Chakra, *Maritime Dimensions of a New World Order*, (India: Anamaya Publishers, 2007).

39. "Migrant Labour in the Gulf", CIRS,(Qatar: 2011).

annually for 25 years,⁴⁰ which began in 2009. Iran sees India as a strong partner that can help Tehran avoid strategic isolation. In addition, economic cooperation with India helps Iran's policy of oil and gas trade as it reduces its market dependence on the West. For India, the relationship is part of a broader long-term effort, both strategic and diplomatic. India also regards the Iranian connection as helping with its own energy needs. Deepening ties have been reflected in the growth of trade and particularly the January 2005 deal. An Indian company gets a 20 percent share in the development of Iran's biggest onshore oil field, Yadavaran, which is operated by China's state oil company, as well as 100 percent rights in the Juefeir oil field.⁴¹

India and Iran also have been cooperating on the North-South Transportation Corridor, a project to link Mumbai, via Bandar Abbas with Europe. Security ties with Iran have also been advancing. India has agreed to provide Iran with training in military science and technology⁴². Other developments include the first Indo-Iranian combined naval exercises and an Indian effort to upgrade the Iranian port of Chahbahar, on the Gulf of Oman, which serves as a forward base for the Iranian Navy. The Indo-Iranian relationship is however not without problems. Iran, of course, has never been happy about India's close ties with Israel and in the light of the Iranian nuclear ambitions; pressure from the United States has influenced India to reduce its oil imports from Iran to a minimum level. However, in the midst of the insurance embargo on Iranian shipments put forward by the European Union, the Indian Shipping Ministry has allowed State run oil refiners to import Iranian crude oil through ships arranged by Iran.

India also has access and naval support facilities in Qatar. It includes naval security guarantee that would help secure the offshore assets of Qatar and provide joint ventures in production of weapons and military equipment. The maritime cooperation agreement provides India with a strategic naval base in the Gulf region. The India-Qatar maritime security initiative provides a convergence of Indian naval power with Qatari naval forces in order to

40. Donald L. Berlin, "India in the Indian Ocean", *Naval War College Review* (USA: 2006), v. 59, n. 2.

41. Ibid.

42. See S. Joshi, "India and Iran : A pragmatic alliance", RUSI Brief, January 2011, available at <http://www.rusi.org/publications/newsbrief/ref:A4B5ECBACB14AB> accessed on 13 oct 12.

combat the variety of maritime threats of terrorism, piracy and securing the offshore oil installations.⁴³ In 2007, India sent two flotillas to make port calls in the countries of the Persian Gulf and to engage with them in joint naval exercises.⁴⁴ India, however has recently tried to reduce its dependencies in the oil-rich but unstable Persian Gulf by moving beyond Iran and attempting to cultivate a broader and more diverse set of relationships with other countries.

The most significant recent development has been India's ties with Saudi Arabia, India's largest source of petroleum imports. Since Oman, Iran, and the United Arab Emirates share the border around the Straits, relationship with these three countries also remains crucial in fostering a secure environment in the Strait of Hormuz.

India's responses have been in tune with the regional consumers of oil from the region, echoing in unison the intensity of a price rise in the region

INDIA'S ROLE AND PROBABLE RESPONSES

In connection to statements emphasised by Iran on the closure of the Strait, India's responses have been in tune with the regional consumers of oil from the region, echoing in unison the intensity of a price rise in the region. The cost of re routing the oil would be far high for India, which is already suffering economic crunches and may in turn increase cost of living and related commodities in the country. Any new routes via the Gulf of Aden might involve tighter security measures for India in order to avoid pirates in the region and may involve more involvement of the Indian Navy. Also, India has fallen victim to the ongoing US-Iranian spat in the Persian Gulf with the killing of an Indian fishermen off the coast of Dubai, by the a American Naval ship.⁴⁵ Though the killing was condemned, it raised security threats for neighbouring countries like India and their national interests in the region.

43. Lawrence Prabhakar William, "Peril Awaits at the Strait of Hormuz", July 22, 2010, www.freerepublic.com.

44. Narender Kumar, "Challenges in the Indian Ocean Region- Response options", (New Delhi: Knowledge World Publishers, 2011).

45. Atul Aneja, " Indian fishermen killed in US firing", *The Hindu*, July 12, 2012.

THE INDIAN NAVY AND RESPONSES

It is relevant to note that the Indian presence has been consistent in the Arabian Sea and the Strait of Hormuz, apart from being one of the largest regional navies, compatible with conventional and nuclear powered submarines, surface combatants and air power. The Indian Navy has also been involved in a number of multilateral exercises, and disaster and humanitarian relief operations in the region. The Indian Navy currently houses an aircraft carrier Viraat, frigates, offshore patrol vessels, minesweepers and amphibious ships and possesses corvettes, maritime patrol aircraft and anti ship missiles.⁴⁶ It has also been engaging with other countries to increase and enlarge its current naval capabilities. Therefore in regard to its dependence on the Strait of Hormuz for its energy resources, Indian Navy has been keeping a check on regional navies and any asymmetric threats in the region. Also, it has been expanding its maritime domain awareness and strengthening naval capabilities, both operational and diplomatic.

However, with respect to closure or congestion on chokepoints and immediate responses by India, it is important that the capabilities of its navy and maritime power must be further expanded to meet up with its vast energy requirements and trade. India should engage in pre positioning of its ships near chokepoints such as the Strait of Hormuz that can help in taking quick responsive action in case of an emergency or conflict in the region and can help guide and guard Indian interests including its ships and tankers. Surveillance and tracking must be given more emphasis including a national maritime surveillance policy that helps to keep alert of the SLOCs at all times by the Indian Navy and the Coast Guard.⁴⁷ The Indian Navy must also possess integral air capability in fleet operations for surveillance purposes that can help monitor crisis situations in the region.⁴⁸ Also, more mine counter measure vessels must be included in the navy's stockpile that can help avoid any adverse situations in the chokepoint at any given point of time. It is to be noted that during the Iran- Iraq war of 1980-88, around ten

46. n. 5.

47. See Sangram Singh, " Maritime Strategy for India", in K N Nayyar(ed.), *Maritime India* (Delhi: Rupa and Co., 2005).

48. Ibid.

Indian flagged vessels became targets of sea mines, aerial bombs, anti missiles and rockets while passing through the Strait. India must therefore invest in more satellite based coastal sensors that help in collection of timely data and analysis. Also, in terms of escort of Indian tankers and vessels, there have been debates among strategists that they must be equipped with naval ships that provide air defence, frontline surveillance aircraft and anti submarine capabilities to avert any sort of collision or obstruction in the region.⁴⁹

India cannot jeopardise its relations with all the countries of the Persian Gulf which are consistently cordial and friendly

Also, in the midst of such crisis, India cannot jeopardise its relations with all the countries of the Persian Gulf which are consistently cordial and friendly. Most importantly, India must engage with naval powers around the world in multilateral exercises and forums constantly. Although India has been modernising and improving its naval capabilities since the late 1990s, it currently lacks the capability to deploy forces on a permanent basis beyond the reach of its bases. Nevertheless, India's geographical position provides it with considerable strategic leverage, as it is located along the major transit route and it possesses several smaller islands across the ocean. This could enhance India's potential to become a maritime power in the long run.

ALTERNATE PIPELINES

The strategic location of India allows it to play an important role in the maintenance of the SLOCs in the India Ocean region. However with the emerging demands, India should be able to have a change in its policy making and strategic planning mainly to protect the SLOCs mainly the Strait of Hormuz to establish governance frameworks that will facilitate the integration of rising powers and maintain an open world economy. Global production chains are vulnerable to supply disruption originating from the Persian Gulf therefore business initiatives should re-assess their policies

49. Gurpreet S Khurana, "Maritime forces in pursuit of National Security- policy imperatives for India" (Delhi: Shipra publishers, 2008).

Global production chains are vulnerable to supply disruption originating from the Persian Gulf therefore business initiatives should re-assess their policies regarding risk management

regarding risk management.⁵⁰ Investments that involve alternate pipelines from the region into India must be sought after, including the UAE pipeline that can help India import oil via Oman. Understanding the evolving geopolitics of energy security, India has been currently pursuing active talks with Oman to build a 2000 km deep underwater pipeline via Oman from the gas producing countries such as Qatar and UAE.

In regard to alternate pipelines for India, the Iran-Pakistan-India pipeline has been in the negotiating tray for a long time. Pakistan can interfere with India's maritime route to the Persian Gulf and considering and, therefore, capable of disrupting India's oil supply. The IPI pipeline has also been under tension from both neighbours which bases itself on lack of trust and security issues. The \$ 7 billion project involves two 2,000 kilometres pipelines from Iran's South Pars fields to India's west coast of Gujarat, via Pakistan and mainly remains stalled due to economic and political reasons. India fears a security guarantee from Pakistan; and disagreement on the pricing of natural gas by Iran remains a major irritant⁵¹. Also, US pressure on India to abandon the project keeps playing around into the success of the pipeline. However India has signed the Turkmenistan-Afghanistan-Pakistan-India pipeline recently that aims to help India in terms of crisis management and diversion from conflict ridden Persian Gulf. The pipeline which is about 1,800 km long will have a capacity of 90 million metric standard cubic metres a day of gas for a period of 30 years and is likely to become operational by 2018.⁵²

PAKISTAN AND INDIA

In regard to the Strait of Hormuz and maritime interests, it is important to note that Pakistan has also been building up its naval capabilities

50. n. 1.

51. Rahul Roy Choudary, "India's maritime security" (Knowledge World, India: 2000).

52. "TAPI pipeline gas sale agreement signed", The Hindu, May 23, 2012.

such as missile armed fast attack aircraft and air independent propulsion submarines,⁵³ to meet up with any challenges in the region, apart from being a large recipient of crude oil from Saudi Arabia. Pakistan is an energy deficient country and exports a large part of its energy resources from the Persian Gulf. The Gwadar port, facilitated by China aims to strengthen Pakistan's energy routes and also aid a build up against conflicts and crises in the Strait of Hormuz. In regards to its energy security, Pakistan has been trying to activate bilateral talks with Iran for constructing a pipeline, despite contentions between the two countries and has been voicing to resolve US-Iran issues through peaceful means. Also, Pakistan has tied up with Qatar to construct a pipeline from its North Dome field to Pakistan via an ocean bottom pipeline from Oman.

Pakistan can interfere with India's maritime route to the Persian Gulf and considering and, therefore, capable of disrupting India's oil supply

In case of a closure of the Strait, Pakistan as an adversarial neighbouring country becomes important for India's entry into the Persian Gulf. Also, during any crisis situations, Pakistan may construct exclusive zones in the Arabian Sea, using its Gwadar port as base and thereby may hinder or threaten India's maritime trade in the region.

CONCLUSION

It also becomes important to note that in connection with India's responses to a possible closure or disruption in the region, India should also be prepared for any crisis situation in the region that requires re-routing and rescue of labour migrants from the gulf countries. India's defence forces must be prepared for any kind of humanitarian intervention. A classic example of the need of airpower capabilities for maritime related issues was demonstrated by the successful airlift that India had conducted during the Gulf War of 1990-91 where it pulled out a large number of its Diaspora from the countries of the Gulf⁵⁴. There is also a need for India to develop

53. n. 48.

54. See Jasjit Singh, "Air Power in the Foreign Policy of Nations" Defence and Diplomacy 2011, vol. 1, no. 1.

a vigorous strategy of oil diplomacy due to the increase in demands for energy, around the world. Also, it is to be noted that pipelines which are being ambitiously followed by India have a long way to go and may be subjected to pressure of funding, geographical limitations and construction.

Therefore, understanding the current existing confrontations in the Strait of Hormuz, we can state that the Indian Ocean and its Rim are very likely to become a stage for the most important global challenges in the 21st century. Persistent conflicts in West Asia will be a continuing source of instability in the Strait of Hormuz and will pose a major security challenge to the international community in general. The Strait of Hormuz and the oil from the Persian Gulf will definitely see an increase in future and with vulnerable moments like the Arab Revolution of 2011 and the constant rhetoric by Iran, little can be said about the situation in West Asia and the price of oil. Therefore it is important that countries dependent on the oil of the Persian Gulf continue to foster good diplomatic and friendly ties with the region. As a developing country that needs to continuously supply its energy needs, India must be prepared to face all challenges in the Persian Gulf and the Strait of Hormuz. India's navy must modernise itself to the vulnerabilities in the region and must try for naval superiority in the region. Also, any future choking of the Strait can impair the energy and security requirements of the country and make it dependent on more costlier and harder forms of energy. Whatever happens in the Strait of Hormuz can affect our national security and thus is of great interest to us. India's foreign policy should adapt to the demands of the rapidly changing global, regional and domestic environments because the Strait of Hormuz in the India Ocean remains a potential hub of crises and conflicts, due to a number of eroding territorial disputes, while at the same time, it also constitutes a major centre for countries that aim at economic development.

BHUTAN AND CHINA RELATIONS: IT'S IMPACT ON INDIA

INDRANI TALUKDAR

China is willing to resolve the border issue with Bhutan. It is an important issue that needs to be addressed by India. With India, China has never been transparent and as forthcoming regarding the border issues as they are with Bhutan. One, therefore, needs to ponder the reason behind China's decision. What is there in Bhutan for which China is willing to walk those miles? The answer towards this could be varied and related to some relevant geo-strategic issues.

First, resolving the border issue with this land of Thunder Dragon¹ means encircling India from the eastern Himalayas. One can argue that in modern times and with the changing face of warfare, which has shifted from conventional to unconventional and hybrid warfare, China's attack on India in terms of conventional terms is imaginary. However, one cannot predict the future with absolute certainty. If one sees the geographical location of Bhutan, then it is easy to perceive how possible it is for China to gain access if it so decides to invade India's territory with its military. This article contemplates on the relationship between Bhutan and China and India's position from a historical perspective. It also tries to analyse the reason behind this relationship and provides some cautious overview for India to ponder.

Indrani Talukdar is a Research Associate at the Centre for the Air Power Studies, New Delhi.

1. "History of Bhutan", <http://motherearthtravel.com/bhutan/history.htm> accessed on November 6, 2012.

If you are coastal, you serve the world; if you are landlocked, you serve your neighbours

BHUTAN'S LANDLOCKED LOCATION AND ITS RELATION WITH INDIA

Bhutan's geographic location of 38, 394 sq. km² is between, India and China where China lies in its north and India's north eastern part in Bhutan's south. One can say that with globalisation and liberalisation, all countries are connected to each other; therefore, relation between Bhutan and China should not an issue. However, one should not ignore certain developing aspects with their intricacies when it comes to these two countries in close vicinity to India. For Bhutan, though a small country, security has been a key aspect which has played an important role in determining its foreign policy. With the new young king of Bhutan, Jigme Khesar Namgyel Wangchuck, a well educated person with good understanding of political science, international relations and economics, it may not be unusual for the ruler to poise with a favourable stance with China.

Bhutan is a landlocked country. In general view, being a landlocked country, which earlier was seen as a disadvantage, has proved to be an advantage. In fact, Paul Collier in his book *The Bottom Billion* has observed that "If you are coastal, you serve the world; if you are landlocked, you serve your neighbors." Hence, being landlocked may actually be a blessing as it creates a 'natural tariff barrier' which protects the country from cheap imports. Bhutan, with this perspective may have been dependent on India till now for its economic growth but then seen from another perspective this has also been favourable for India as well.

The relationship between India and Bhutan has always been constructive. Between both the countries free trade regime exists. India has been the biggest market for Bhutan's products. Almost 94 per cent of total Bhutanese exports are to India and 78% of total imports are from India. India has been the largest donor of external aid to Bhutan and its main development

2. Bhutan shares 470 km of border with China and 605 km of border with India. Like other South Asian countries, Bhutan is also a multi-ethnic and multi-religious country. Mathew Joseph C., "China-South Asia Strategic Engagements: Bhutan-China Relations", *Institute of South Asian Studies (ISAS)* , Vol no.157, August 23, 2012, pp.1-18.

partners. Presently, the Indian government is involved in many Bhutanese Projects including hydropower plants, cement industry and roadways. 40 per cent of the external revenue that Bhutan gets is presently from the sale of electricity to India.³ This is a huge incentive being put forward by both the country. It is because when India had achieved its independence, Bhutan was initially wary of India's intentions. However, after the Chinese occupation of Tibet in 1950 and following the Chinese action of 1958-59 it slowly realised that it needed to come out of isolation for its own survival. India has always ensured that every neighbouring country enjoys the much needed sense of security and sovereignty. This aspect has been witnessed Bangladesh in 1971. In 1958-59 Bhutan could maintain its territorial integrity with India's support though there was no provision in the treaty of 1949 for the defence of Bhutan by India.

Bhutan's quest for an international role does not contradict with the provision of Article 2 of the 1949 Treaty

Since then, Bhutan has tried to assert its sovereign existence at every forum. To this, India has made it clear that Bhutan's quest for an international role does not contradict with the provision of Article 2 of the 1949 Treaty. Its international journey had begun with becoming a member of the Colombo Plan in 1963. In fact, Bhutan's membership of the Colombo Plan was sponsored by India. Bhutan said that its admission to the Colombo Plan had considerable bearing on its sovereign and modern status and registered its first entry into a regional group of sovereign states.⁴ Therefore, it would be apt to say that if today Bhutan enjoys a strong status and is gearing up to play a role in the international relations then the credit lies in India's policies towards it. Bhutan through its trade relations with India strengthened its hold and opened its country for further international trade over a period of time.

3. "Indo-Bhutan Relations", NRI Legal Services, http://www.nrilegalservices.com/indo_bhutan.aspx accessed on November 7, 2012 accessed on Oct 08, 2012.

4. Padmaja Murthy, "Indo-Bhutan Relations: Serving Mutual Interests", IDSA, <http://www.idsa-india.org/an-apr9-8.html> accessed on November 7, 2012.

China is willing to establish formal relations with Bhutan, resolve the border issue between the two nations at an early date, strengthen exchanges in all areas and advance Sino-Bhutanese relations to a new stage

RECENT DEVELOPMENTS: BHUTAN-CHINA

Chinese Premier Wen Jiabao who met Bhutanese Prime Minister Lyonchhen Jigmi Y. Thinley on 21st June 2012 at the sidelines of the Rio summit said that “China is willing to establish formal relations⁵ with Bhutan, resolve the border issue between the two nations at an early date, strengthen exchanges in all areas and advance Sino-Bhutanese relations to a new stage.” He also said that China appreciated Bhutan’s support for the “one China policy” which maintains that Taiwan and Tibet fall under China’s sovereignty.

Bhutan, which enjoys close diplomatic, political and military relations with India, has in recent years begun to widen its diplomatic engagement, establishing relations with another country in the region, Myanmar, earlier in 2012. Bhutan also has diplomatic ties with Nepal, Bangladesh, Sri Lanka, Pakistan and the Maldives, but does not have formal relations with either the United States or the four other permanent members of the UN Security Council.⁶ Both the leaders along with other issues relating to bilateral issues of mutual interest and multilateral cooperation also discussed Bhutan’s bid for a non permanent seat on UN Security Council for the term 2013-2014. Based on China’s five principles of peaceful coexistence⁷, Chinese Premier Wen had also expressed the willingness to open diplomatic ties with Bhutan.⁸ The important point that needs to be noted is the statement of Premier Wen where he pointed out the reason for China’s willingness to complete border demarcation with Bhutan

5. The term formal carries a lot of weightage as Bhutan and China already have diplomatic relations and this be significant not only for both the countries but also for India.
6. Samuel Wade, “China, Bhutan Ready for Diplomatic Relations”, *China Digital Times*, June 22, 2012 <http://chinadigitaltimes.net/2012/06/china-bhutan-ready-diplomatic-relations/>, accessed on August 21 2012.
7. The Five Principles are: mutual respect for sovereignty and territorial integrity, mutual non-aggression, non-interference in each other’s internal affairs, equality and mutual benefit, and peaceful coexistence.
8. Kuenzang Choden, “Prime Minister meets Chinese Premier Wen Jiabao”, *The Bhutanese*, June 22 2012, <http://www.thebhutanese.bt/prime-minister-meets-chinese-premier-wen-jiabao/> accessed on August 21 2012.

at an early date as China believes in a “foreign policy of good-neighborliness”⁹. Will China try to resolve any border issues with its neighbours without any vested interests? The solving issues with Central Asian countries have suggest that energy needs for China could be one of the reasons for such steps with these countries.

The importance of this meeting lies behind the stand of solving the border issue with Bhutan also rests on a few other associated issues. A Bhutan-China settlement would involve a decision on the strategic Chumbi valley tri-junction, which is of great importance to India, with its proximity to the “chicken’s neck” near Siliguri. Bhutan and China have several points of disagreement on the border stretching from Dhoklam in the west to the grazing grounds in the north. China wants hold on those grazing grounds in the west, closest to the Chumbi valley. This has cautioned India. India realising the importance has furthered assistance programme to Bhutan.¹⁰ Bhutan has benefitted by becoming a hydropower exporter to India. India wants Bhutan to be able to export 10000 MW of power to India by 2020. Other economic aid programmes are also likely to be expedited. On the other side, China’s presence is increasing inside Bhutan. China, according to reports has plans to extend its railway network from Lhasa to Zangmu, as well as Shigatse and, it is also contemplated that it could to extend up to Yadong, at the opening of the Chumbi Valley.¹¹

A Bhutan-China settlement would involve a decision on the strategic Chumbi valley tri-junction, which is of great importance to India

BHUTAN-CHINA RELATIONS: IT’S IMPACT ON INDIA

India has placed high emphasis on Bhutan’s security because of its proximity to the Chumbi Valley, a tri-junction between Nepal and its long time

9. Ibid.

10. It would be reasonable to assume that India is entirely not assisting Bhutan on the basis of security. India also understands its responsibility towards fulfilling the obligations contained in the provisions of the Treaty between the countries.

11. Indrani Bagchi & Josy Joseph, “Bhutan mulls opening diplomatic relations with China”, August 18 2012, *The Times of India*, available at http://articles.timesofindia.indiatimes.com/2012-08-18/india/33261269_1_bhutanese-gross-national-happiness-bhutan-and-china accessed on August 21 2012.

The Chumbi valley is important to China also because of its shared borders with Tibet and Sikkim. For China, it has a strategic value

rival China. Bhutan thus serves as a geostrategic buffer in India's northeastern frontier. India has a military base at Bhutan's Haa District and frequently assists in developing its indigenous defensive capabilities.¹² The importance of this valley is immense for India and seems to be equally so for China. The desire for a strong formal step in resolving the border issues with Bhutan indicates the importance of this valley. China claims approximately 300 square miles of Bhutanese territory, mainly in the Chumbi valley, the Torsa Nala, and some areas opposite Haa (western Bhutan) along with some grazing areas in the north.¹³

The Chumbi valley is important to China also because of its shared borders with Tibet and Sikkim. For China, it has a strategic value. It is pertinent to mention that Mao Ze Dong had defined Tibet as the palm which had five fingers -- Ladakh, Sikkim, Nepal, Bhutan and Arunachal Pradesh. Chinese interest in Chumbi valley primarily stems from three reasons. First, China gains proximity to India's North-East and Siliguri Corridor, which connects North-Eastern states to India and Nepal to Bhutan. Second, with access to Chumbi valley, China gets closer to Bangladesh's periphery in the North since only a narrow stretch of land divides Bangladesh from Bhutan. Third, analysts have already pointed out the two important north-south strategic corridors on either side of India — first, the trans-Karakoram corridor extending to Gwadar and second, the Irrawaddy Corridor linking Yunnan to Myanmar. Further, with well laid out road/railway infrastructure, China acquires advantage in military posturing. In fact, according to sources, six roads so far have been built by China near Bhutan's North and North-West areas.¹⁴ When China gets better access in

12. "Bhutan's Foreign Relations", July 10, 2012, <http://gofar.sg/bhutan/2012/07/bhutan-foreign-relations/> accessed on November 6, 2012.

13. Arun Sahgal, "Chinese inroads into Bhutan worry India", *South Asia Monitor*, October 30, 2012, <http://southasiamonitor.org/detail.php?type=n&nid=4176> accessed on November 6, 2012.

14. Medha Bisht, "Chumbi Valley: Economic Rationale but Strategic Resonance", *IDSACOMMENT*, September 23, 2010, http://www.idsa.in/idsacomments/ChumbiValleyEconomicRationalebutStrategicResonance_mbisht_230910 accessed on November 6, 2012.

Tibet and Bhutan then it would potentially weaken India's position at any given point of time. Metaphorically, the 'Druk', or the mythical animal that symbolises Bhutan, is caught between two others, the 'Elephant' and the 'Dragon'. Bhutan would then have a tendency to follow what the Scandinavian analyst Erling Bjøl, while describing Finland's relations with the Soviet Union, had called the 'pilot-fish behaviour', that is 'keeping close to the shark to avoid being eaten'. As long as India was the only major protagonist to relate to, this could be done more easily.¹⁵ China now poses a different picture for the future and it could become more challenging for India than it was before.

All the developments between Bhutan and China will have to be seen from the correct perspective. Of course, China will play its reiterated stand of peaceful existence and will also indicate economic factors as the governing reason. What would be required by India, besides strengthening diplomatic relations and economic growth of Bhutan, is the pace at which such issues are dealt with in this country. There would be a definite requirement of being proactive in bilateral issues with Bhutan. This is necessary as China is promoting itself to become the largest trading partner with Bhutan as has been its strategy, be it in Asia or any other continent in the world.

Bhutan got its independence from India in 1949 and has kept strong relations. Thimphu and New Delhi's relationship has been governed by the 1949 Treaty of Friendship between the Government of India and the Government of Bhutan—in force and perpetuity—which calls for peace and noninterference in internal affairs and India's guidance and advice in external relations. Bhutan has been exhibiting greater independence in its foreign policy, and by the early 1990s was, in effect, autonomous in its foreign relations. Thimphu has established bilateral diplomatic relations with other countries, as mentioned earlier, and has joined various multilateral relations with several regional organisations. Bhutan is a member of the United Nations, SAARC, the Non-aligned Movement (NAM), and the Asian Development Bank (ADB).

15. Iftekhar Ahmed Chowdhury, "Bhutan: Shades of 'Shangri-La' in a Haven of 'Happiness'", *Institute of South Asian Studies (ISAS)*, Working paper No.163, May 3, 2012, pp. 1-7.

Globalisation has made the once-secluded states or small states (be it landlocked or coastal countries) prominent in the international arena and has since designed their policies to enhance their security

Developments between China and Bhutan may be seen in the light as to what happened with Sri Lanka and led to the strengthening of China and Sri Lanka relations. Although one may argue that Sri Lanka's request for military hardware from India and consequent response led to other strengthening of relationship with China and developmental issues may well be witness to certain realities.¹⁶ The recent agreement which had taken place between Sri Lankan government and the state-owned China Aviation Technology Import-Export Corporation (CATIC)

on February 2011 though stalled due to domestic reasons is an example. Interestingly, the company, which exports military wares to Sri Lanka, was also looking to set up a luxury hotel and shopping mall, according to the terms of the agreement. It had swiftly opened a local office, made a down payment and prepared to take possession of the ten acres of land opposite the green has been owned by the defence ministry and till recently housed the army headquarters and military hospital.¹⁷

Globalisation has made the once-secluded states or small states (be it landlocked or coastal countries) prominent in the international arena and has

16. Sri Lanka and China has been having a diplomatic relationship but 2009 showed the strengthening of its ties with Chinese majority of the military hardware on display during the victory parade of eliminating LTTE. Defence analysts say that China's support - both diplomatically and in terms of arms sales - played a key role in Sri Lanka's ability to secure a military victory over Tamil Tigers after many western countries stopped selling weapons to Colombo, citing concerns over human rights abuses. China's reasons for supporting Sri Lanka have been partly domestic. It has long held that nations should be allowed to deal with separatist movements internally to help avoid international involvement over the issues of Xinjiang and Tibet. But one of the main reasons China threw its weight behind Colombo's war is located at the southern tip of the teardrop shaped island. It is here, near the sleepy fishing town of Hambantota, that China is constructing a US\$1 billion deep water port that would provide docking and refuelling facilities for the thousands of ships that ferry oil and raw materials from Africa and the Gulf through the Indian Ocean to China every year. Some military analysts see Hambantota as one of the most recent additions to China's "string of pearls". Hannah Gardener, "China's Aid Revealed in Sri Lanka's Victory Parade", *The National*, June 9, 2009, at <http://www.thenational.ae/news/world/south-asia/chinas-aid-revealed-in-sri-lankas-victory-parade#page2> accessed on November 9, 2012.

17. "Sri Lanka and China: About Face", *The Economist*, October 29, 2011 at <http://www.economist.com/blogs/banyan/2011/10/sri-lanka-and-china> accessed on November 9, 2012.

since designed their policies to enhance their security. Incrementally, slowly but surely, these small countries have begun to assert their independence and sovereignty.¹⁸ Bhutan has been active at international level through its membership in international organisations and also maintained its relations with India. In fact, both the countries renegotiated the 1949 Treaty in 2007. Both the countries agreed during 2007 to “reaffirm their respect for each other’s independence, sovereignty and territorial integrity”. India also gained the status of being Bhutan’s largest trading partner. In turn, India’s energy-hungry economy bought back the hydroelectric power funded by it in Bhutan. Bhutan has also cooperated with India troops in flushing out insurgents.¹⁹ It can be noted that India’s acknowledgment of smaller partners have always been relevant and given due important.²⁰

However, there have been changes with certain renegotiations between Bhutan and a rising China. Bhutan, like all countries, has been concerned about its security. Earlier it drew this comfort blanket of security from India and now for future it would not be wrong to assume that it can commence nurturing deeper relationship with China not only economically but also militarily (in all the three sectors: army, navy and air force). It is interesting to know that in past, Bhutan also had trade relations with Tibet which ceased in recent decades. The borders between Bhutan and Tibet closed with the influx of some Tibetan refugees into Bhutan in the 1960s. In 1998 Bhutan and China signed an Agreement on Peace and Tranquility on the Bhutan-China Border. 470 km border There have been observations of China’s intrusions into Bhutan but it seems that these intrusions from the Chinese side were more towards India than into Bhutan.²¹

In 1998, Bhutan and China signed a landmark agreement to seek a peaceful settlement to a four-decade old border dispute. In 1958, when China was trying to claim the Indian Territory, its maps also showed 200

18. Chowdhury, “Bhutan: Shades”, n. 15, p. 5.

19. Ibid.

20. This acknowledgment was more important for India because as a growing power it showed its humbleness and also its strategy of keeping a healthy and harmonious relationship with no scope of turning against India because of any grievances towards India or any dissatisfaction from India’s side.

21. Chowdhury, “Bhutan: Shades”, n. 15. pp 5-6.

Bhutan may still have certain apprehensions towards India due to the military defeat during 1962 and can be a reason for the current leaning towards China

sq miles of Bhutanese territory as part of Tibet. It is important to note that India's first Prime Minister Jawaharlal Nehru had said in the Parliament that any attack on Bhutan would be considered an attack on India. Later, India's defeat against China in the 1962 War had made Bhutan skeptical about the capability of India to look after its defence as well as Bhutan's. Confidence seemed to have been restored following the Indian victory in 1971 when India defeated Pakistan and Bangladesh gained independence. The process of normalisation of relations between India and China also made it possible for Bhutan to have direct bilateral talks with China on boundary issues, thus, providing Bhutan an extra space to implement its foreign policies.²²

Bhutan may still have certain apprehensions towards India due to the military defeat during 1962 and can be a reason for the current leaning towards China. China, as mentioned above, is growing as an economic power and also as a military power whose influence is spreading far and wide. Therefore, to prevent itself from being 'gobbled by a big fish', Bhutan could be playing safe with China. Interestingly, without the absence of official diplomatic missions, China is Bhutan's sixth largest import market. Also, Bhutan has viewed the inability of the international community to interfere or resolve issues over Kashmir and Tibet.

The apprehension that Bhutan might go into China's fold seems far-fetched given the with regard to the current state of relations Bhutan has with India and its past experience with China.²³ However, security has always been paramount issue for all countries irrespective of its international standing in a fiercely competitive world. China's position with respect to Tibet and India's and Bhutan's attitude with respect to this position will have influencing effects in the relations between these countries. Bhutan has many historical links with Tibet. Bhutan's recognition in the international

22. Padmaja Murthy, "Indo-Bhutan Relations: Serving Mutual Interests", *IDSA*, <http://www.idsa-india.org/an-apr9-8.html> accessed on November 7, 2012.

23. *ibid.*

arena has a lot to do with what is China's position on Bhutan. A hardened position against Bhutan by China can have its own repercussions for the growing relation with a regional power as far as Bhutan is concerned. Bhutan will then have to take a balanced view when it comes to maintaining ties both with India and China.

CONCLUSION

It may seem like a mind game and for researchers and policy makers there is a lot to read in between the lines. Viewing through a prism of caution, India would do well to keep a vigilant eye on the growing relationship between Bhutan and China. Although there are international laws, one cannot deny the dominating positions of regional powers in influencing and garnering support.

Strategic implications for India would get compounded if Bhutan has to toe China's views and influence. Bhutan geographically interjects any foray that China has to make through the Chumbi valley and Tawang. The Siliguri Corridor is vulnerable to a Chinese offensive in that region which can isolate the entire North Eastern region as far as accessibility through land is concerned. Hence, Bhutan's neutrality is extremely important and absolutely imperative as it forms both a barrier and buffer between the two countries. Rapid development in road and associated infrastructure opposite Chumbi Valley including rail network from Lhasa to Zangmu and cannot be overlooked. This expansion might point towards Chinese attempts at upgradation of operational posture.

The defence of India, therefore, linked closely with that of India. Bhutan would ideally provide launch pad for the Chinese in case of a military offensive. Therefore, if Bhutan diplomatically allies with China then attendant military ramifications will be very many. In plain speak, access to Chumbi Valley through Bhutan, in addition to the traditional routes would

severe and isolate the north east²⁴ will open the flank of Tawang--Tenga sector and widely exposing the threat to the plains of Assam.²⁵

A considered understanding all the above it is imperative that India needs to maintain a steady and healthy relationship with Bhutan. India needs to look inwards and strengthen its defence preparedness and infrastructure building along the border, in order to counter any military offensive. Bilateral and constant focused efforts to engage Bhutan as a strategic and economic partner. The role of the Indian Military Training Team (IMTRAT) positioned in Haa district in Bhutan becomes important in very many ways to provide the platform for furthering relationship between the two countries. The June 2010 visit of Indian Army chief, General VK Singh, to Bhutan to promote defence ties between the two countries was indeed an encouraging development in this context. Maximise soft-power approach and create an enabling environment for rapid economic growth. A strong institutionalised mechanism not only from the economic point of view but also for strengthening political and cultural ties between India and Bhutan will be important factors.

Concluding the understanding of the relationship between Bhutan and China it can be seen as a two-sided requirement. On one side, a rising China would try in every way to contain India and also expand its influence regionally and globally. On the other side, Bhutan would also take up a reasonably safe position against a strong player. For India, it is extremely important for not only looking into the economic growth but also needs to have issues of national security as paramount concerns.

24. For India it would be a return of an old memory and an event where Pakistan during 1947 in its voracity and vindication against India had wanted to occupy Kashmir. During this campaign, Pakistan Army's aim was to cut off road in 1947 as India would have no other means to control the state. Jasjit Singh, "The Kashmir Issue and India-Pakistan Conflict", 3rd Capsule Course for Centre for Air Power Studies or Delhi University Students on *India's Security Challenges* (October 1-6, 2012), October 3, 2012.

25. Arun Sahgal, "Chinese inroads into Bhutan worry India", *South Asia Monitor*, October 30, 2012, <http://southasiamonitor.org/detail.php?type=n&nid=4176> accessed on November 6, 2012.

SOUTH CHINA SEA IMBROGLIO: AN INDIAN PERSPECTIVE

SANA HASHMI

It is universally accepted that the rise of a great power has never been frictionless and introduces fundamental changes at the very core of international politics.¹ China's rise is an impeccable paragon of the above mentioned argument. China's rise, which Chinese initially termed as 'peaceful rise' and later changed to peaceful development' in 2004, is accompanied with inevitable changes in the world order. China, as of now, is the second largest economy in the world which overtook Japan's economy in late 2010, and it is realistic to say that within 10 years China will be roughly the same size as the United States (U.S.) economy which is almost three times the size of Chinese economy in dollars terms.² China's ambition to surpass the U.S. economy in a few years is notably achievable. It is deemed that China's economy will surpass the U.S. in 2025 to become the world's largest economy, with a GDP of around U.S. \$ 31 trillion.³ Apart from China's remarkable economic advancement, People's Liberation Army (PLA), over the time, has become one of the most competent militaries in the world. It is significant to note that since the emergence of China as a communist state in 1949, China has been demonstrating its potential in almost all the expanses across the world. Against all odds and despite the

Sana Hashmi is a Research Associate at the Centre for the Air Power Studies, New Delhi.

1. Available at http://www.idsa.in/idsacomments/ObamasFaultyTrade-OffinEastAsia_rmishra_091209 accessed on December 30, 2011.
2. Available at <http://www.bbc.co.uk/news/business-12427321> accessed on March 2, 2012.
3. Available at <http://business.rediff.com/slide-show/2010/apr/22/slide-show-1-china-will-be-the-worlds-largest-economy.htm>(accessed on September 26, 2011).

U.S. still being the only superpower, China has much greater influence in the regions where the U.S. still endeavours to establish its foothold such as South Asia and Southeast Asia. It is indubitable that in the recent past, China has become a dominating feature in the foreign policies of almost all the countries of Asia and the U.S.

Territorial and maritime disputes have been the subjugating factors of the international system in the twentieth and twenty-first centuries. The point of distinction is that the scope of attention has been shifted from Europe to Asia and gradually deviating from land to water disputes. Interestingly, China has long-standing territorial and maritime disputes with many of its neighbours. With regard to territorial disputes, India is the only country with which China has not yet resolved its differences; the border dispute on the Northeastern front of India is still intact. While many conflicts have been resolved, no amicable solution has been reached upon regarding South China Sea dispute and has become a bone of contention for China and its relations with most of the Southeast Asian countries. Interestingly, China's assertive behaviour in relation to territorial and maritime disputes makes most of the Asian countries no less than anxious of China's ulterior motives. In this context, Robert Kaplan upholds that China, whose land borders are more secure than at any time since the height of the Qing dynasty at the end of the 18th century, is engaged in an undeniable naval expansion.⁴ China's rising military capabilities coupled with its ever-rising aggressive behaviour in the region and its territorial and maritime claims have caused concerns especially in those countries which are involved with China in South China Dispute i.e., Association of Southeast Asian Nations (ASEAN) member states and those wary of China's rise, mainly India, Japan and the U.S.

SOUTH CHINA SEA ENTANGLEMENT

In today's time, South China Sea dispute has become one of the most capricious and precarious issues involving China and key Southeast Asian

4. Available at http://www.foreignpolicy.com/articles/2011/08/15/the_south_china_sea_is_the_future_of_conflict accessed on January 20, 2012.

countries and has indeed transpired as the biggest predicaments in China's relations with its neighbouring countries lately. This dispute, to a large extent, has not only scraped China's so called good neighbourly policy⁵ but also its already dubious peaceful development theories which are beheld by most of the countries with strong apprehensions. The matter gets more convoluted in the light of the fact that Beijing has affirmed it as its 'core interest', the term which was previously reserved for sensitive areas and close to China's heart, like Taiwan and Tibet. China's declaration of South China Sea being a core interest issue demonstrates that Chinese deem it as an inalienable part of China and not going to compromise its stand of sovereignty over the islands. What makes the issue more complex is that despite suggested proposals by other involved parties of opting for multilateral solutions, China is reluctant for any multilateral elucidation to the problem, instead desires to unravel it bilaterally.

China has a long-standing historic claim to sovereignty over the Spratly Islands, a group of reefs, islets, atolls, sand cays, banks and islands, in the South China Sea, which it refers to as the Nansha Island. China has perpetually demurred to the other plaintiffs claiming sovereignty over the islands. Moreover, China has not only claimed its sovereignty rights over the Spratly Islands but also on their adjacent waters⁶ in its official submissions to the United Nations. To substantiate its claim on South China Sea, China maintains that it has historical linkages with the sea and was the first to discover, name, develop, conduct economic activities on and exercise jurisdiction of the Nansha Islands.⁷ While China's expansive and imprecise claims to most of the waters, islands and natural resources of

5. Good neighbourly policy is described by Chien-peng Chung, in his article "The "Good Neighbourly Policy" in the context of China's Foreign Relations" in *China: An International Journal* in 2009, as a comprehensive approach to pursuing better relations with neighbouring states in the Asian and Pacific region, and has always been considered by the ruling Communist Party of China (CPC) as a major part of its foreign policy interests since 1949.

6. The 'adjacent waters' refer to the 12 nautical mile territorial sea which can be claimed from any land territory, including islands. According to UN provision of *Article 3 of Territorial Sea and Contiguous Zone, Breadth of the territorial sea*: "Every State has the right to establish the breadth of its territorial sea up to a limit not exceeding 12 nautical miles, measured from baselines determined in accordance with this Convention".

7. Available at <http://www.fmprc.gov.cn/eng/topics/3754/t19231.htm> accessed on August 15, 2012.

the entire South China Sea, which are echoed by Taiwan, the other “one China”, rest on a mixture of hoary historical accounts and international law; the other claimants claiming sovereignty over islands, Brunei, Malaysia, the Philippines and Vietnam, all base their cases on the United Nations Convention on the Law of the Sea (UNCLOS), to which China is also a party since 1996.⁸ China’s protest at submissions by Vietnam (including a joint submission with Malaysia) to the United Nations Commission on the Limits of the Continental Shelf (UNCLCS) in May 2009 and China’s submission of a u-shaped map containing nine-dashed lines shows virtually the entire South China Sea on Chinese maps as, in fact, China’s rightful international boundary.⁹

China maintains that by claiming South China Sea, China is just attempting to protect its sovereignty and avert containment from countries like the U.S. and Japan; however, ASEAN member states, particularly Brunei, Malaysia, Philippines and Vietnam have a different story to recount. They speculate that it is merely another maneuver by China to take hold of resources of South China Sea and eventually dominate Southeast Asia and for that matter whole of Asia-Pacific.

The dispute, involving the overlapping claims of six governments to territorial sovereignty and maritime rights, encompasses the main sea lines of communication that connect Southeast Asia with Northeast Asia, covers large fishing grounds and may contain vast reserves of oil and natural gas.¹⁰ As former PLAN Commander Admiral Liu Huaqing observed, “whoever controls Spratlys will reap huge economic and military benefits”.¹¹ What makes it more imperative for China is that it is one of the most busiest sea-lanes in the world with one-third of the sea-borne trade passes through it and about 80 per cent of China’s crude-oil imports go through the South China Sea; moreover, it has proven oil reserves of 7 billion barrels and an

8. Available at <http://www.bloomberg.com/news/2012-08-12/a-good-neighbor-policy-for-peace-in-the-south-china-sea.html> accessed on August 25, 2012.

9. Marvin Ott, “Southeast Asia’s Strategic Landscape”, *SAIS Review*, Vol. 32 No. 1, Winter Spring 2012, pp. 113-124.

10. M. Taylor Fravel, “China’s Strategy in the South China Sea”, *Contemporary Southeast Asia: A Journal of International and Strategic Affairs*, Vol. 33 No. 3, December 2011, pp. 292-319.

11. *Ibid.*

estimated 900 trillion cubic feet of natural gas, a potentially huge bounty.¹² It also has strategic significance for China. In case of war with the U.S. over Taiwan, it will act as a buffer for China where it has a new nuclear submarine base on the South China Sea.¹³

Though China has an upper hand in the conflict, but China's proximity to South China Sea is not that close as compared to its proximity with Vietnam and Philippines. The main Chinese naval bases in the South China Sea, Yulin on Hainan Island and Zhanjiang, the headquarters of China's South Seas Fleet on the mainland, are much farther from the disputed islands than are the bases of potential enemies.¹⁴ This could prove as a major disadvantage for China. Moreover, with the demise of the Soviet Union, China now has the world's second largest submarine fleet, after the U.S. But all of the PLAN's diesel powered boats are based on 1950s Soviet designs. Only forty-six of the fleet's one hundred boats are on active duty.¹⁵

SOUTHEAST ASIA'S POLICY IN SOUTH CHINA SEA

It is no hidden fact that China and key Southeast Asian countries are unequal powers which makes ASEAN member states all the more apprehensive and fretful. Moreover, they are entirely conscious of China's mounting naval capabilities and their militaries are in no comparison to that of Chinese. Though Sino-ASEAN economic relations is at its peak in the contemporary period and have the biggest Free Trade Agreement (FTA) in terms of population; despite thriving economic ties, apprehensions still linger on.

ASEAN had been pressuring China to sign the Declaration on the Conduct (DOC) of Parties in South China Sea since 1992 but China ratified it only in 2002 on its own terms. The declaration reaffirmed UNCLOS, the Treaty of Amity and Cooperation (TAC), and China's five principles of peaceful coexistence and the parties in conformity with these norms eschewed the

12. See http://www.foreignpolicy.com/articles/2011/08/15/the_south_china_sea_is_the_future_of_conflict?page=0,1 accessed on January 20, 2012.

13. Lyle Goldstein. "Chinese Naval Strategy in the South China Sea: An Abundance of Noise and Smoke, but Little Fire", *Contemporary Southeast Asia: A Journal of International and Strategic Affairs*, Vol. 33 No. 3, December 2011, pp. 320-347.

14. Ibid.

15. Tai Ming Cheung, "Lacking Depth," *Fur Eastern Economic Review*, February 4, 1993, p.11.

use of force, assumed a practice of self-restraint, and sought to build an atmosphere of trust and cooperation through dialogue and joint initiatives.¹⁶ ASEAN DOC was seen as a step towards peaceful resolution without non-binding provision. Nonetheless, it was just a mere illusion and was apparent that signing of DOC in 2002 and TAC in 2003 was no more than a meager formality to project its benign image to the world and condense the perceived China threat as China continued to maintain its claim in an assertive manner.

Intriguingly, in the 1970s, Vietnam was the only contender in the Paracels, called Xisha Islands in Chinese and Hoang Sa in Vietnamese. In contrast, presently China must share the Spratly Islands with other nations and China has garrisoned seven atolls, but Vietnam has occupied 21 atolls, the Philippines has placed troops on eight, and the Malaysian flag flies over two atolls.¹⁷ However, after the Sino-Vietnam clashes in 1974, whole of Paracel comes under the jurisdiction of People's Republic of China (PRC). Vietnam assumed the chair of ASEAN in 2010 and made the prolific use of its tenure by bringing the issue of South China Sea on the agenda. H.E. Pham Gia Khiem, Deputy Prime Minister and Minister of Foreign Affairs of the Socialist Republic of Viet Nam, stressed on the importance of maintenance of peace and tranquility in South China Sea and also on the significance of DOC for ASEAN and China which paved the path for reconvening of the ASEAN-China Joint Working Group on the Implementation of the DOC held in Vietnam in April 2010.¹⁸

China has been detaining and seizing Vietnamese fishing crafts particularly near Parcels. In 2009, 33 ships were detained and 433 crew members were impounded.¹⁹ In 2011 again, China began to create obstacles for Vietnam by intimidating Vietnamese oil exploration vessels operating within Vietnam's Exclusive Economic Zone (EEZ). Vietnam also claims that

16. ASEAN Secretariat, "Declaration on the Conduct of Parties in the South China Sea," November 4, 2002, available at <http://www.aseansec.org/13163.htm>. accessed on 12 Sep 12.

17. Michael G. Gallagher, "China's Illusory Threat to the South China Sea", *International Security*, Vol. 19 No. 1, Summer 1994, pp. 169-194.

18. 43rd AMM/PMC/17th ARF VIETNAM 2010 Chairman's Statement 17th ASEAN Regional Forum Ha Noi, 23 July 2010 available at <http://www.aseansec.org/24929.htm>.

19. Crlyle A. Thayer, "The Tyranny of Geography: Vietanmese Stratagese to Constrain China in the South China Sea", *Contemporary Southeast Asia: A Journal of Internal and Strategic Affairs*, Vol. 33 No. 3, December 2011, pp. 348-369.

Chinese ships cut the cables towing seismic equipment on two occasions, May 26 and June 9, 2011.²⁰

Since the wounds of the Sino-Vietnam war are still fresh, Vietnam is trying to enhance its naval capabilities by having benign relations with major powers of Asia and for that matter with the U.S. also. For instance, Vietnam will take delivery of six *Kilo*-class submarines from Russia in 2014.²¹ Moreover, Vietnam has also offered Cam Ranh Bay as a repair facility to all navies in the world in an effort to encourage the presence of foreign navies in the South China Sea.²²

Philippines always advocated the presence of the U.S. and other powers in the region which eventually leads to internationalisation of the issue basically for containing China and preventing China threat. Its strategy is somewhat similar to that of Vietnam's strategy. As far as Brunei is concerned, despite having a sovereignty claim over the Louisa Reef, a small atoll in the South China Sea that overlaps with Chinese claims, Brunei tends to downplay the issue with Beijing by focusing on multilateral mechanisms for dispute resolution and joint development.²³

However, Malaysia has a different approach towards China. The bandwagon approach adopted by Malaysia was intended to compel the Chinese through declarations of friendship. However, Malaysian officials reacted negatively to China's territorial law in 1992 and were inclined to view China as a threat; this attitude changed after former Malaysian Prime Minister Muhammed Bin Mahathir's visit to Beijing in June 1993 when friendship with China was proclaimed.²⁴ This stand led Malaysia to adopt China's method of going for bilateral solutions rather than multilateral solutions.

20. Available at <http://www.reuters.com/article/2011/05/27/vietnam-china-idAFL3E7GR15720110527> (accessed on July 27, 2011).

21. Available at <http://www.thanhniennews.com/index/pages/20110703195314.aspx> (accessed on August 4, 2011).

22. M. Taylor Fravel, "China's Strategy in the South China Sea", *Contemporary Southeast Asia: A Journal of International and Strategic Affairs*, Vol. 33 No. 3, December 2011, pp. 292-319.

23. Available at http://www.atimes.com/atimes/China_Business/NK09Cb01.html accessed on November 12, 2012.

24. Lezek Buszynski, "ASEAN, The Declaration on Conduct and the South China Sea", *Contemporary Southeast Asia: A Journal of International and Strategic Affairs*, Vol. 25 No. 3, December 2003, pp. 343-362.

The most peculiar and disturbing verity about ASEAN's approach towards the problem is that its approach is estranged towards China's claims of sovereignty. All the ten states have different attitudes towards China. In simpler terms, there is no consensus among them while dealing with the issue. While Vietnam and Philippines have a firm stand against Chinese claims and yearn for a multilateral solution, preferably with the intervention of a foreign power; Malaysia wants to opt for a friendlier approach with agreeing to China's demand of bilateral resolution of the problem. Since Singapore and Indonesia are not parties to the conflict and non-claimants, they have somewhat neutral stand on the issue while hoping for an amicable and prompt resolution. However, China's long-time ally Cambodia has a very positive approach towards China which is accounted for China's financial aid to the country. In 2011, China's investment in Cambodia was more than ten times that of the U.S.²⁵ 2012 ASEAN Summit was hosted and chaired by Cambodia and evidently had immense pressure to keep the issue of South China Sea out of the agenda from China's side. Philippines wanted Cambodia to include confrontation between Philippine and Chinese ships over Scarborough Shoal in March 2012 in the discussion. However, the summit ended not even without mentioning of South China Sea, but for the first time in the history of ASEAN, joint communiqué was not issued. ASEAN Secretary-General Surin Pitsuwan called the meeting outcome "very disappointing" while Marty Natalegawa, the foreign minister of Indonesia who tried but failed to forge common positions said it was "irresponsible" for the group to skip a joint statement for the first time in its 45-year history.²⁶ This incident clearly shows the apparent division in the strategies of ASEAN countries for dealing with China which makes the issue complicated and far from a solution.

CHINA-U.S. RIVALRY IN SOUTH CHINA SEA

It is most pertinent to say that the U.S.'s somewhat faded engagement

25. Available at <http://www.voanews.com/content/china-considered-cambodian-king-ally/1526697.html> accessed on November 1, 2012.

26. Available at <http://www.rfa.org/english/east-asia-beat/asean-07132012125100.html> accessed on October 26, 2012.

precisely in Asia-Pacific is revisited with its entry into sixth East Asia Summit (EAS) in Bali, Indonesia in 2011. Earlier, the U.S. President Barack Obama indirectly hinted that due to financial constraints,²⁷ the U.S. was never so keen on expanding its paws in the Asia-Pacific region and like any other country; the U.S. also was ignorant of the significance of the growing markets of Southeast Asia for a very long time. The U.S. increased presence and participation in the region is merely a result of China's expanded influence and assertiveness in Asia-Pacific along with vast and lucrative markets of Southeast Asia. In order to countervail China's ever-increasing influence in Asia-Pacific region, Southeast countries involved in South China Sea dispute welcome U.S.'s increasing presence in the region. Moreover, anticipating that dealing with China alone is not an astute alternative, the Southeast Asian countries; particularly the Philippines and Vietnam have sought the U.S. support, which regards as it a chance to make its presence inexorable in the region.

It is no less than a surprise that "The U.S. is taking active moves aimed at developing military cooperation with the countries of the Asia-Pacific region, stationing troops in Australia, building a base in the Philippines. And starting from 2013, the U.S. Navy ships will be permanently based in Singapore, i.e. in the narrowest place of the Strait of Malacca, which can be easily blocked off in case of an aggravation of the conflict and thus China will be almost completely cut off from the deliveries of hydrocarbons from the countries of the Middle East and Africa".²⁸ Freedom of navigation in the region is also a contentious issue, especially between the U.S. and China over the right of U.S. military vessels to operate in China's two-hundred-mile EEZ, thus potentially denying access to the U.S. Navy in the western Pacific.²⁹

The U.S. in its first meeting at EAS solicited China and all its members to solve the dispute peacefully and multilaterally, abided by the 1982 UN

27. Available at <http://www.eastasiaforum.org/2012/11/11/what-obamas-second-term-means-for-asia/> (accessed on November 11, 2012).

28. See http://indrus.in/articles/2012/05/16/conflict_in_the_south_china_sea_and_indias_interests_15782.html accessed on June 15, 2012.

29. Available at <http://www.cfr.org/east-asia/armed-clash-south-china-sea/p27883> accessed on November 2, 2012.

Convention on the Law of the Sea. The U.S. wants nothing less than to bring hard security issues to the table, including free navigation and the avoidance of hegemonic dominance over the South China Sea, China will do anything to avoid this.³⁰

While countries like Vietnam, Philippines, Brunei, Malaysia, India and Japan are admiring U.S. presence in the region, U.S. existence is excruciating for China knowing that U.S. is the only country which has the potential to intimidate its hegemony in Asia. China wants the U.S. to maintain a distance from Southeast Asia and for that matter, from whole Asia. China's apprehensions regarding the U.S. soon turned into reality when the U.S. in the very first meeting of its entry into EAS brought the matter of South China Sea, asked for more clarity and suggested China to go for multilateral solution. However, the bringing of South China Sea issue by the U.S. on the forum of EAS and for that matter on any other forum is seen by Chinese as a ploy to counterbalance China's pivot to Asia. Even the U.S. Defence Secretary Leone Panetta at the 11th Shangri-La Dialogue held on June 2, 2012 in Singapore acknowledged that differences between the two largest economies of the world, the U.S. and China exist; South China is one of the major issues of differences and he further said that the US will shift a majority of warships to the Asia-Pacific region by 2020 which is perceived by the Chinese officials as an attempt to fence in the country and frustrate Beijing's territorial claims.³¹

It's not a recent happening that the U.S. has been discussing about the dispute on various international forums. In 2010, U.S. Secretary of State Hillary Clinton at the July 2010 ASEAN Regional Forum of which China and the U.S. are members, in Hanoi stated that "the sea lanes through the South China Sea constituted a major international artery that, like other important sea lanes, were a part of "global commons," that is, they belonged

30. Available at <http://www.eastasiaforum.org/2011/06/01/2011-east-asia-summit-new-members-challenges-and-opportunities/> accessed on November 29, 2011.

31. Available at <http://www.reuters.com/article/2012/06/03/us-asia-security-idUSBRE85100Y20120603>(accessed on September 26, 2012).

to all nations and were not subject to a sovereign claim by any one of them.³² Clinton's statements including a U.S. offer to mediate the South China Sea disputes not only triggered an angry response from China at what it views as U.S. interference in its affairs, in reply to that Jiang Yu, Chinese Foreign Ministry spokesperson "We resolutely oppose any country which has no connection to the South China Sea getting involved in the dispute, and we oppose the internationalisation, multilateralisation or expansion of the issue. It cannot solve the problem, but make it more complicated. China tells U.S. to keep out of South China Sea dispute".³³ A *China Daily* article criticised the Obama administration as attempting "to cozy up to ASEAN countries" and "strengthen its influence in the region so as to contain China by forcing countries to take sides."³⁴

The U.S and China are like two swords in one scabbard. Since both the countries are aspiring and competing to establish their hegemonies in Asia, it becomes quite difficult for them to tolerate each other in the international system. However, when it comes to dealing with each other, they are friends in front and no less than a foe at the back. U.S.'s increased presence and interference in what China calls as internal matters and China's somewhat stiff stand on its dealing with the dispute and ever-escalating opposition to the U.S. make their relations more unstable. Thence, it won't be a wrong assertion to make that if the rise of a superpower is not -frictionless then tiff of two superpowers will indeed be fretful and bound to have an impact on the entire international order.

INDIA'S DILEMMA

In contemporary international politics, India is widely envisaged as a key major power and one of the dominant stakeholders in the emerging East Asian security dynamics. The expectations from India's rise have also

32. U.S. Department of State, Secretary of State Hillary Rodham Clinton, "Remarks at Press Availability," Hanoi, Vietnam, July 23, 2010 available at <http://www.state.gov/secretary/rm/2010/07/145095.htm>.

33. Available at <http://mobile.reuters.com/article/politicsNews/idUSTRE68K1DB20100921?i=5> (accessed on July 10, 2011).

34. Available at Lyle J. Morris, "Incompatible Partners: The Role of Identity and Self-Image in the Sino-U.S. Relationship", *Asia Policy*, No. 13, January 2012, pp. 133-165.

instigated it to inject a new dynamism into India's relations with the great powers of world that have strong foothold the region: the United States, China, and Japan; furthermore, India's relations with these countries are heavily dependent on how India's economic and political rise will attribute to the new world order. As a consequence, India is no longer seen as marginal to either the regional politics of Southeast Asia or the great power system that shapes it.³⁵

India is very well aware of the fact that despite flourishing China-ASEAN relations, Southeast Asia is apprehensive of China particularly because of its greater self-assertiveness in South China Sea. Since China has not only been a potential threat but also a competitor of India that might be the reason for India's increasing presence in Southeast Asia.

It is presumed that despite disapprovals from China and some of the ASEAN's members, India was invited to the EAS predominantly because of its potential to contain China. The U.S. and Russia were included later in the summit largely for the same reason. However, diversifying the summit was another major reason.

India-Vietnam cooperation in oil exploration began in 1988 and in 2006, it reached another level with the signing of another bond between India's Oil and Natural Gas Corporation (ONGC) Videsh Ltd and Vietnam's Petro Vietnam in two blocks, 127 and 128 in Phu Khanh, Vietnam. China protested at the time that both blocks were in its waters, and maintains that position now, according to the People's Daily article.³⁶ Protest by China resulted into India eventually succumbed to the pressure and withdrawn from Vietnam's oil block 127.

Spark again ignited in 2012 when ONGC decided to involve in oil exploration activities with Petro Vietnam in two blocks which Vietnam said is outside the purview of the Chinese claim. In reply to that Wu Sichun, president of the National Institute for South China Sea Studies, a Chinese government supported think-tank, argued that the 40 per cent of the two blocks come under

35. C. Raja Mohan, "India's Geopolitics and Southeast Asian Security, *Southeast Asian Affairs*, Volume 8, pp. 43-60.

36. Available at <http://online.wsj.com/article/SB10001424053111904563904576586620948411618.html> accessed on January 26, 2012.

Chinese claim and involvement of ONGC Videsh in exploration projects in the two blocks will make the dispute “more complicated”, India will face “political and economic risks” if its companies continue exploring for oil in blocks off the coast of Vietnam in the disputed South China Sea and further alleged that “Vietnam’s maritime strategy to try and invite international oil companies and governments to get involved.”³⁷

Time and again, apart from the U.S., China has warned India several times not to engage in any oil and gas exploration activities in the water of disputed South China Sea which comes under China’s jurisdiction. As if opposing and then pressurising India to withdraw from blocks was not enough, it was reported by *Financial Times, London* that Indian Navy vessel *INS Airavat* was harassed by Chinese navy when it was on a friendly visit to Vietnam between July 19 and 28.³⁸ The most probable cause for the pestering can be comprehended as the China’s opposition to any external country’s intrusion into South China Sea and to some extent India’s escalated cordial relations and joint naval exercises are unendurable to China.

Another incident of China’s opposition to any external company getting involved in oil and gas exploration activity came into light when in August 2011 the U.S. giant oil company Exxon Mobil Corp proclaimed that it had discovered hydrocarbons in August off Central Vietnam, in an area also claimed by China.³⁹ Later it was reported that executives of the ExxonMobil, had been approached by Chinese officials and warned not to proceed with a deal the company had signed in June to explore for energy resources off the Vietnamese coast.⁴⁰

CONCLUSION

While most of the scholars, party to the conflict and observer believe that China and ASEAN member states should craft a code of conduct in a more

37. Available at <http://www.thehindu.com/news/international/article3281437.ece> accessed on April 10, 2012.

38. Available at <http://www.ft.com/intl/cms/s/0/883003ec-d3f6-11e0-b7eb-00144feab49a.html#axzz2C7eU4uSr> accessed on September 26, 2011.

39. Available at <http://in.reuters.com/article/2011/10/31/idINIndia-60218620111031> (accessed on September 26, 2011).

40. Ian Storey, “Maritime Security in Southeast Asia: Two Cheers for Regional Cooperation”, *Southeast Asian Affairs*, Volume 2009, pp. 36-58.

formalised way, China is still reluctant to compromise on any of its stands. It seems Chinese current leadership is a stern follower of erstwhile Paramount leader of PRC, Deng's Xiaoping's thought. Once he said *hide your strength bide your time* which current leadership is following without fail. China has been delaying any solution to the problem for a very long time and just buying the time so that it consolidates its claim on the sea and enhances its naval capabilities. This strategy is certainly analogous to what China has been doing with India in regard to its border dispute since 1962.

What remains to be seen is that what new leadership has to offer in relation to South China Sea, is it going to be all the more assertive and aggressive or is it actually going to resolve the dispute by adopting moderate solutions. However, the latter scenario seems to be far from reality. Since, in the current scenario, China cannot afford and less likely to use force against antagonists, China has to deal with them through negotiations, compromises and concessions. China had adopted and strengthened two-pronged strategy while dealing with claimants. On the one hand, China continues to maintain its claim and on the other hand, strengthening its ties with the claimants and other states involved in it like the U.S. and India through prospering economic relations. It is not a surprise that China is the biggest trading partner of ASEAN and has almost established its foothold in Asia-Pacific region. It is sensible to say that in the recent times, China's policy towards the South China Sea and claimants over the sea is the flawless depiction of Deng Xiaoping's concept, *sovereignty is ours, set aside disputes, pursue joint development* which seeks peaceful settlement of the dispute and enhancement of the relations with the opponents while maintaining claims on the territory in a courteous manner. In apposite terms, Chinese are dealing with the problem with Chinese characters and to be precise, according to its own convenience. Nonetheless, what remains in doubt is the future of the dispute and China-ASEAN relations with the changing dynamics and whether China can afford to risk its relation with vast market of Asia on the grounds of its expansionist hunger.

Diverse stances of Cambodia, Philippines, Brunei, Malaysia and somewhat neutral stands of Singapore and Indonesia tend to create problems

in the way of discerning amicable solution. It is advisable for the nations to resolve their internal differences and disparity in opinion and then deal with China since unity is most vital while dealing with external powers. There is a fair probability that Southeast Asia will become a battleground for China and U.S. and will become a victim of their rivalry. What they need to do is play safe and the focus should remain on reaching upon the solution of the dispute. ASEAN needs to prove its metal and be more efficient in coming up with more robust strategies for dealing with China on the issue. As far as this issue is concerned, ASEAN has somewhat been laidback and hasn't been proved as an effective organisation which has come to become one of the major weaknesses of this regional organisation. Southeast Asian nations should not overshadow the fact that both the U.S. and China are trying to establish their hegemonies in China, one by supporting ASEAN on the stand of South China Sea and another by getting more and more assertive and claiming sovereignty over South China Sea. The U.S. knows that if it needs to establish its foothold in Asia, it needs to countervail China's increasing hegemony. In the event of war between China and the U.S., which is less likely to occur in the near future, U.S. will be having an upper hand since it has more advanced naval force than PLAN and China is aware of this fact. Hence, taking into account China's sagacity, given a chance it won't go for war with the U.S.; instead deal with it diplomatically. Considering the economic relations between the two giants, war is the least possible scenario. Thus, it is a challenge for both the nations to maintain cordial relations with each other on the sidelines of their common desire to be a hegemon without being threatened by each other. Since Asia is the growing region of the world, both the countries have their eyes on the blooming economy of Asia. Another challenge remains in front of these two giants as to whether contain each other or to balance each other. They are in dilemma whether this hate-love relationship would be of any benefit to them or would prove more hazardous for them. These are the little skepticism which will persist to linger for a very long time.

As far as India is concerned, it is aware of the importance of Southeast Asia in terms of economy and strategic position in the world order but at

the same time, it is also conscious of the status of China in the contemporary times. Very recently Southeast Asia has occupied a central stage in the world's economy. Hence, it has become quite arduous for India to decide whether it want to be a friend or foe of China when it comes to Southeast Asia. It won't be wrong to say that competition is at its peak in Asia-Pacific with the China, U.S. and India competing to be a superpower in the *Asian century*⁴¹. If India wants to upgrade its status from South Asian power to Asian Power, it has to adopt a balanced strategy which neither hurts nor benefits China but at the same time, India should know that ASEAN is an important step in realising India's dream as it is indeed India's bridging gap to East Asia. India should take advantage of the fact that despite thriving economic relations, ASEAN is equally apprehensive of China due to its greater assertiveness in South China Sea and gain the conviction of these strategically important nations. Indubitably, India's policy in Southeast Asia should be similar to that of China's policy in South Asia. China took advantage of India's differences with other South Asian countries and created its own space in Indian subcontinent. To a great extent, countering China threat was one the major reasons why India's Look East Policy, initiated in 1991 with economic motives, has added political facet to its dimension. It is beyond the shadow of doubt that ASEAN perceive India as a potential partner to balance China with regard to South China Sea. However, it is very much a reality that since ASEAN-CHINA FTA is the biggest FTA in the world in terms of population, ASEAN won't risk its economic relations.

Most scholars argue that South China Sea dispute is the dispute of the future and going to unfold more in the near future but there won't certainly be a war; status quo will be maintained with a stalemate. It is in the best interest of China-ASEAN relations to resolve the dispute with a sense of urgency. China's intentions and future course of action remain secretive and appear to be apprehensive to ASEAN as PRC's former Leader Hu Jintao urged the next leaders of PRC to work towards the rise of the country as a

41. The term *Asian Century* was coined during the meeting of the then Prime Minister of India and China's Paramount Leader, Deng Xiaoping in 1988 who were of the opinion that 21st century will be dominated by India and China and other powers of Asia.

maritime power on the eve of leadership transition on November 8, 2012. It is indeed an ambiguous situation with China, ASEAN, the U.S. and India being deeply involved in the matter and hence, its effects on the respective parties remain to be seen in the future. No matter what is the fate of South China Sea; however, one thing is for sure, all the stakeholders and observers of the dispute require employing strategies to prevent escalation of tension in the region and make the Asia-Pacific region a more harmonious and let blooming trade ties dominate the relations.

AIRSHIP: A VIABLE AIRLIFT OPTION

ASHOK K. CHORDIA

In 1783, as Benjamin Franklin watched the ascent of a small unmanned hydrogen balloon over Paris as a 'technology demonstrator', an onlooker remarked, "Of what possible use is it (the balloon)?" Franklin shot back, "What is the use of a newborn babe?"¹

AIRLIFT – A MOBILITY OPTION IN WAR AND PEACE

Wars of the last hundred years have highlighted the importance of all roles of air power and airlift is one of them. Conflicts of the last two decades, in particular, have shown that airlift can bring about significant asymmetry in military powers of the opposing forces. It ensures prompt and timely transportation of personnel – combatants, technicians and those supporting operations, including civilians; supplies to maintain their combat potential and, equally important, the ordnance to execute the war. Airlift is the lifeblood of military logistics. Its profound effect on warfare has turned the course of history on numerous occasions.

Air maintenance is the lifeline of troops in remote areas inaccessible by road. Transport aircraft and helicopters deliver supplies many times faster than surface means across mountainous and jungle terrain often crisscrossed by rivers. Relief operations involving emergency airlift and air evacuation save innumerable lives during earthquakes, cyclones, tsunamis and floods. Airlift is the backbone of search and rescue operations. Some countries dedicate air effort for fire fighting also.

The option to airlift is influenced primarily by the urgency of *time*. Occasionally, *inaccessibility* of locations by other means of transportation,

Group Captain **A. K. Chordia** is a Senior Fellow at the Centre for Air Power Studies.

1. This repartee has been attributed to different people in history. Attribution apart, the balloon turned out to be a useful airborne platform and was soon adopted for military purposes. It is time to have a re-look at airship as a viable option for airlift.

Airlift is the lifeblood of military logistics. Its profound effect on warfare has turned the course of history on numerous occasions

even when there is no urgency, may prompt airlift. For reasons of economy, surface means are always considered before resorting to airlift. Prudence demands judiciousness in use of airlift resources in peacetime to conserve them for national emergencies and wars – the most economical airlift options needs to be exercised, when the stakes are low.

AIRLIFT PLATFORMS

The earliest airlift platforms included the *lighter-than-air* balloons and the airships². The Wright Brothers' aeroplane (1908) was a *heavier-than-air* platform. The most common ones of today are either fixed or rotary wing aircraft. Tilt-rotor aircraft are hybrid machines that have features of both. Less common, yet in use, is the air cushion (hovercraft) technology. In August 2012, the U.S. military tested a radical new hypersonic aircraft, the X-51 WaveRider. It was expected to reach a speed of 7200 kmph within seconds.³ The experiment failed.⁴ Success would have implied the distance between London and New York being covered in an hour.

At this point in time, when *speed* seems to be an obsession the world over, a suggestion to relook at the airlift potential of airships may sound downright quixotic. A moment of dispassionate thought will, however, present a different perspective since airships have been in use for more than a century in different roles – bombing, reconnaissance, patrolling and anti-submarine operations. The focus here is on their airlift capability in peacetime.

The starting point of this paper is the thought that airlift is a necessity to meet defence and development needs of a country and that the operational and economic viability of any airborne platform that can airlift personnel and cargo must be considered without prejudice.

HOW ARE AIRSHIPS DIFFERENT?

Lighter than air gases like hydrogen and helium provide the buoyancy

2. Airships could be *rigid* or *semi-rigid*; they could be *blimps* or *dirigibles* – there are subtle technical differences. Here, all these air platforms are being covered under 'Airship'.
3. Agencies, "London to New York in an hour? Key test today" in The Times of India online edition dated August 14, 2012 accessed on August 21, 2012.
4. BBC NEWS Technology, *Hypersonic jet Waverider fails Mach 6 test*, August 15, 2012 available at <http://www.bbc.com/news/technology-19277620> accessed August 21, 2012.

necessary to keep an airship afloat. The gas is counterbalanced with weight – cargo or otherwise, to maintain equilibrium. Powered engines are needed mainly to propel the platform. Thus, a failed engine would not bring an airship crashing down. Though they fly at speeds lower than the fixed wing aircraft and helicopters, they have the advantage of range, endurance and hover; the latest ones on the drawing board boast of the advantage of payload too. They consume relatively less fuel for propulsion.

The airframe of an airship requires just enough strength to support itself and to bear the stresses associated with low-speed flight. Its low speed makes it less susceptible to the dynamic stresses that can cause conventional aircraft to break up in flight, if damaged. Helium leaks slowly into the atmosphere because the gas envelopes need a slightly higher pressure than the ambient atmosphere.

Airships do not require long runways and large prepared surfaces for launching and landing. They require relatively less facilities on the ground than the conventional aircraft. Therefore, they are capable of delivery of payloads even to locations with minimal infrastructure. Depending on technological feasibility, airships may be able to carry payloads comparable to some of the largest fixed-wing aircraft. With suitable design, development and modifications, it may be possible to use them for a variety of airlift operations including parachute drops of personnel and supply.

Heavier-than-air aircraft, in contrast, require stronger, and therefore generally heavier airframes. They need more powerful and reliable engines because they generate lift by *pushing* their wings/ rotors through the air at high speed. They need fairly well established infrastructure on the ground for operations.

AIRSHIPS – A SIGNIFICANT PAST

Balloons and airships were used as observation posts in the early days of aviation and were the first to carry men and material across inhospitable terrain. German navy airships patrolled the seas as early as 1914. They used Zeppelins for bombing in early 1915. The U.S. navy too used airships extensively from the 1920s through the 1950s, primarily in anti-submarine, reconnaissance and maritime patrolling roles. Occasionally, civilian airships were used for advertising and transportation. Early 1930s saw airships carrying passengers across the Atlantic. An innovative and daring application of the airship was a “*flying aircraft carrier*”. USS Macon and the USS Akron were rigid airships

used for launching Curtiss Sparrowhawk biplane fighters.⁵ During the 1920s dirigibles were used for luxury air-travel, particularly for cross-Atlantic flights. A mooring mast spire atop the Empire State Building is a symbolic relic of a time when airships were believed to be the future of air mobility.⁶

The lurking fear of accidental fires due to the use of the highly inflammable hydrogen gas, in the initial years, was a big negative incentive. The fears were rooted in just one accident. On May 6, 1937, one of Hindenburg's airships on a PR mission, burst into flames at Lakehurst, New Jersey. Though, of the 97 people aboard 62 survived, it was deemed as one of the most infamous disasters of the 20th century. The accident earned extreme notoriety because of the media presence. Terrifying photographs of the accident were splashed on the pages of newspapers and magazines all over the world. Mr. Pankaj Som Chaturvedi of TRA Aerospace asserts that it was not the use of hydrogen gas but the highly inflammable paint applied on the surface of the airship that aggravated the fire. *Body count* was perhaps not the only reason for public alarm because four years later, when the airship USS Akron crashed into the Atlantic killing more than twice as many people but the accident drew much less attention. Nonetheless, such accidents with media glare relegated the airships into oblivion.⁷

Successful and widespread use of fixed wing aircraft including gliders weaned off the attention of the protagonists from further development and military use of airships. Vulnerability of the airships to ground defence is always a given. It was the reason behind the waning interest in the platform. The last dedicated military airship went out of use in the early 1960s.⁸ The research to exploit lighter than air platforms continued, albeit at a slow pace. Replacement of the highly inflammable hydrogen gas by an inert gas like helium allayed fears of disasters but to no avail.

RECENT DEVELOPMENTS

The last two decades have seen a revival of interest. Police blimps patrolled the sky during the Republican National Convention (2004) and during the Olympic

5. *USS Macon and Sparrowhawk* available at <http://www.youtube.com/watch?v=IWoEQRl8dCs&feature=related> accessed September 5, 2012.

6. "Passenger Dirigible" on Dead Media Archive site available at http://cultureandcommunication.org/deadmedia/index.php/Passenger_Dirigible accessed on November 5, 2012.

7. "Airships: The Hindenburg and other Zeppelins" available at <http://www.airships.net/hindenburg/disaster> accessed on May 27, 2012.

8. Keith Hayward, *The Military Utility of Airships* (London: RUSI, 1998), p. 1.

Games in Atlanta (1996) and then in Athens (2004). The Special Anti-Crime Unit of Trinidad & Tobago (SAUTT) operates a blimp for security surveillance. In April 2009, it provided surveillance of the 5th Summit of the Americas in Port-of-Spain.⁹ These are uses of airships for surveillance and policing. With suitable modifications, it may be possible to design airships specifically for airlift. Boeing was to build an ambitious heli-stat – a combination of a blimp and a helicopter. The project was shelved, apparently for want of funds.¹⁰

Some of the armed forces, the world over, have narrowed down to manned and unmanned airships

The need of inexpensive airlift platforms with low operating costs and capable of carrying heavy cargo has generated renewed interest in airships, as alternatives to surface transport and the conventional aircraft, to some extent. Some of the armed forces, the world over, have narrowed down to manned and unmanned airships. The civilian effort covers a wider spectrum of use.

A November 2011 study under the auspices of United States Congressional Budget Office deliberated on the use of airships in intelligence, surveillance and reconnaissance (ISR) role and for limited missile attacks against less capable adversaries on the ground without an air defence cover. According to the study, concern had arisen during the 1990s that rapid deployments like those, to large airbases in Saudi Arabia during the first Iraq war, would not be possible in a future scenario if such airbases were not available. Proponents argued that transport airships capable of landing in any suitably large open area could reduce the military's dependence on overseas bases.¹¹ Needless to say that this is a coveted capability for India with its major airlift commitments.

The report suggests that the U.S. army, air force, and the Defence Advanced Research Projects Agency (DARPA) were focussing on unmanned craft for ISR. Over the previous two years, Department of Defence (DoD) had funded more than \$500 million for projects related to *lighter-than-air* platforms, and additional spending is planned for the future. Additionally, several privately funded development efforts

9. "Police Aviation" at http://en.wikipedia.org/wiki/Police_aviation accessed on August 27, 2012.

10. Lewis Page, "Airship 'Sky Tugs' ordered from Lockheed for Canadian oilfields: P-791 military hover suck-blimp gets civil application," posted in *Science*, 28th March 2011, *The Register* at http://www.theregister.co.uk/2011/03/28/p791_ordered_for_Canadian_oilsands/page2.html accessed on November 5, 2012.

11. Author's discussion with Mr. Pankaj Som Chaturvedi and report of a study titled, "*Recent Development Efforts for Military Airships November 2011*" available at their site <http://www.cbo.gov/sites/default/files/cbofiles/attachments/11-01-Airships.pdf> accessed August 19, 2012.

Presently, lighter-than-air platforms are being used mainly to cover sporting events and policing. They are also being used to carry over-dimensioned cargo like the long blades of windmills

were under way that could yield airship designs suitable for adoption by the DoD. The *Pelican* and the *Sky Tug* are hybrid airship projects to enable carriage of 20 to 60 tonnes over ranges of about 1,000 to 3,000 nautical miles. These payloads and ranges compare well with some of today's leading airlift aircraft of the world – the C-130, the C-17 and the C-5. From 2003 to 2006, the DARPA pursued *Walrus*, the Hybrid Ultra-Large Aircraft (HULA) Project to build an airship that could carry 500 to 1,000 tons up to 12,000 miles in less than seven days.¹²

Presently, *lighter-than-air* platforms are being used mainly to cover sporting events and policing.

They are also being used to carry over-dimensioned cargo like the long blades of windmills, which cannot be carried by trailers to locations on hilltops due to difficulty of manoeuvring through winding roads and hairpin bends.

The U.S. uses airships mainly as unmanned, long endurance surveillance platforms. They carry relatively small payloads and, therefore, need much less gas and their pressure height limits are high enough ensuring survival above the battlefield.¹³ They have been used in Afghanistan regions not threatened by ground defence. As said earlier, with modifications it may well be possible to use similar airships for mobility.

Northrop Grumman and its industry partners have successfully developed the world's largest, most-persistent, lighter-than-air operationally piloted aircraft.¹⁴ Though details in the open domain are not readily available, it is believed that China has also used (tugged) aerostats in Mongolia for movement of cargo.

Skylifter, an Australian firm, is developing an airship that will carry up to 150 tonnes over 1000 kms. According to the firm, once developed, the airship will carry rural hospitals and disaster relief centres to remote areas.¹⁵

AVERAGE THROUGHPUT CAPACITY: A SIMPLE COMPARISON

One of the simplest measures for characterising strategic lift systems is

12. Ibid.

13. Lewis Page, n. 10.

14. "Aviation Defence News," *Vayu*, V/2012, p. 147.

15. "Giant airship that can carry entire buildings 2000 kms," *The Times of India*, Wednesday, October 6, 2010, p. 21.

average throughput capacity: the product of payload and the distance that payload can be moved in a day. Despite their slow speed, (sea) ships tend to have a high throughput capacity, primarily because they can carry much more than an aircraft can. For a notional deployment from the United States to the Middle East, a sealift ship would provide nearly 30 times the throughput capacity of a C-17. Cargo airships could provide an intermediate capability, delivering cargo more quickly than ships but not as quickly as conventional aircraft. Large airships with payloads of 500 to 1,000 tons would yield greater throughput capacity than today's aircraft.¹⁶

At medium distances (up to about 100 nautical miles), the number of airships needed to maintain a given cargo throughput (say, 1,000 tons/day) would be similar to the number of helicopters. At long distances (> 100 nautical miles), the greater ranges offered by the airships would enable them to maintain a given throughput with fewer aircraft. This advantage would enable a single airship mission to meet the requirements of several posts/ units/ formations on the ground sequentially, instead of individual missions that would be needed with other aircraft.

PEACETIME AIRLIFT: SOME ASSUMPTIONS

Past experience and derived wisdom suggests that even in peacetime, physical shipment by air occasionally assumes greater relevance and importance than the speed of delivery. Quantity does matter – tonnage airlifted is always a concern. Despite want of statistical data in the open domain on the airlifts carried out by the Indian Air Force, it may be safe to assume that a major portion of the effort is devoted to peacetime transportation of men and cargo and airborne training of the troops. Also, since war is not an on going process, airlift takes place in a *safe* environment generally free of threat to the airlift platform. Further, technologies meant for remote guidance and control have reached high levels of maturity. It will be possible to make use of those technologies on airships.

Therefore *if* and *when* airships are devoted to airlift they would take flight in a secure airspace. Ditto for airlifts that would be undertaken to assist the civil administration during disasters and natural calamities – survivability/ air defence of the airships must not be a grave overriding issue under those circumstances.

16. Despite low throughput, fixed wing aircraft and helicopters have certain distinct advantages over sealift. An aircraft could begin delivering cargo much sooner than sealift. Thus, it is important that when considering transportation, planners ascertain urgency for airlift.

AIRSHIP AS AN AIRLIFTER: SOME STRAIGHT OPTIONS

Trend suggests that in the *not-too-distant* future, more and more airships of varying sizes will share the skies with other flying machines. Countries that invest in the technology are likely to benefit from the airlift potential of the airships. Proposals already exist for airships that could accommodate payloads of various sizes ranging from 20 to 50 tonnes. Some obvious uses of airships include:

- **Airborne Hospitals.** To provide medical services to people in remote areas during peacetime. Such hospitals would be of immense value during epidemics and disaster relief operations.
- **Air Maintenance.** Airships could be used for delivery of supplies to the Drop Zones (DZs) and Advanced Landing Grounds (ALGs) in the eastern sector as a matter of routine.
- **Connecting Island Territories.** In the Andman and the Lakshdweep Islands, airships could provide superior connectivity.
- **Airborne Training.** It may be possible to use airships both for static-line and combat freefall (CFF) training jumps. Relatively smaller drop zones would be needed for training jumps from airships.¹⁷
- **Troop Movement.** In regions with less road density and across inhospitable terrain, men take several days to arrive at the nearest railway stations when they proceed on leave/ duty in another part of the country. Airlift could be a boon for those serving in such areas.
- **Infrastructure Development.** Construction and maintenance of aircraft operating surfaces, roads and accommodation for personnel in the border areas is an on-going process. It lacks speed for want of heavy machinery and steady supply of large amounts of construction material. Airships could provide necessary logistical support.
- **Winning Hearts and Minds (WHAM).** Used thoughtfully, airships can be effective in WHAM by reaching out to the masses in areas affected by Naxal activities.
- **Easing Traffic.** Airlift of vehicles and men across cities can reduce volume of traffic on the roads. It can relieve the surface transports of their rush hour woes.
- **Ferry Across Rivers/Terrain.** Airships may be utilised to carry deliverables where rivers are aplenty and bridges are very few like Assam, Kerala and the Sunderbans. Air ferries can transform lives of the people.
- **Unit Movements.** Large convoys and military special trains are

17. Some jumps from fixed wing aircraft would still be required for more realistic training.

involved in movements of units/ formations within India. Airships could accomplish such movements more smoothly.

- **Managing Roadblocks.** Landslides and accidents disrupt traffic for days on end because of inaccessibility of the sites by surface means. Helicopters can carry limited heavy equipment and raw material for repairs. It may be possible to address such needs more effectively with airships.
- **Fighting Fire in High-rise Buildings.** Airships could be used for fighting fires in high-rise buildings by landing fire-fighting teams and delivering equipment and large quantities of water on rooftops.
- **Jungle Fire fighting.** Similarly, airships could deliver large quantities of water to fight jungle fires.
- **Oil Exploration.** Oil exploration needs heavy machinery the transportation of which requires new roads. Construction of new roads only for exploration for more or less one-off use is an expensive proposition. Besides, creation of such infrastructure takes a long time and harms the environment. To address the problem, Canada has ordered Lockheed Martin for airship 'Sky Tugs' for their oilfields.¹⁸
- **Evacuation.** In a scenario like the expulsion of Asians from Uganda (1972). It may be difficult to evacuate a large population using conventional aircraft. Due to the high throughput of airships at short distances it may be possible to evacuate large numbers of people to a friendly neighbouring country using heavy lift airships and then, evacuating them by ships or conventional aircraft at a comfortable pace. During the Iraqi invasion of Kuwait, it was more important to get more people out of harm's way than to carry them to India instantly. In that situation, use of heavy lift airships could have made the exercise simpler.

EXPANDING THE HORIZON

Airships, and other airlift platforms for that matter, are mere means to an end. Their effectiveness depends on how well they are exploited. The huge earthquake and tsunami that struck Japan's Fukushima Daiichi nuclear power station on March 11, 2011 knocked out backup power systems that were needed to cool the reactors at the plant, causing three of them to undergo fuel melting, hydrogen explosions, and radioactive releases. Radioactive contamination from the Fukushima plant forced the evacuation of communities up to 25 miles away and affected up to 100,000 residents, although, it did not cause any immediate deaths. Helicopters

18. N. 10.

that carried water to douse the fire at the nuclear reactors were handicapped. They could carry small payload, about 2.5 tonnes, which had little effect on the blaze. Their *bellies* had to be coated with lead to lessen the effect of nuclear radiation. This further reduced their capacity to carry water. Pilots who flew those sorties did so at the peril of their life. A pilotless airship with a capacity of 60 to 70 tonnes would have achieved more tangible results – no risk to lives, much larger quantity of water being delivered in every lift. Besides airships could have effected evacuation of much larger number of people. Similarly, an airship could have carried hundreds of residents upwind and saved them from the poisonous gases emanating from the Union Carbide pesticide plant in Bhopal (1984).

Airships as *airborne aircraft carriers* can throw open a wide range of options hitherto not contemplated with seriousness or, if at all, seen with considerable scepticism. It may be possible to conduct sustained search, rescue and relief operations from such platforms during accidents and disasters. Dozens of *Airmules*¹⁹ could ply casualties in and out of an airborne hospital. *Keeping vigil* over an area for long hours and delivering troops instantly to counter terrorists, insurgents or Naxals could be a considered option.

Situations like the Berlin Blockade that require airlift in a secure airspace cannot be ruled out in the future. On the Easter Parade (April 16, 1949) Tunner's men had airlifted a record 12,941 tonnes into Berlin, in 1,398 sorties averaging one round trip for every one of the 1440 minutes in the day.²⁰ Today, assuming that airlifters with, say 60 tonnes payload capacity²¹ are available and are pressed into action, only 216 sorties at the rate of nine sorties per hour would be required to carry the same tonnage.

Imagine squadrons of airships sprinkling water over crops in drought-affected areas or spraying chemicals when large pest infested areas need immediate attention.

Possibilities are numerous; horizon needs to expand.

LIMITATIONS

Development of airships has remained dormant for decades. There is limited

19. "The AirMule is a compact, unmanned, single-engine, VTOL aircraft. Still under development, it can evacuate 2 casualties. It could be used for other payloads for other missions. It is suited to special robotic operation, for example via Tele-Presence." More information available on Urban Aeronautics site at <http://www.urbanaero.com/category/airmule> accessed on December 18, 2012.

20. Lt. Gen. William H. Tunner USAF, *Over the Hump* (Washington D.C.: Office of Air Force History, USAF, 1985), p. 222.

21. This is a modest capacity assuming the pace of developments; the *Skylifter* aims at 150 tonnes capacity.

collective and cumulative experience in airship designing, operation and maintenance. Advances in the technology have not been tested and proven to high levels of confidence. Doubts remain even about the most modern airships. Technologies needed for critical systems – propulsion and power, fabric for airship envelopes, flight control systems and sensors – are in different stages of development.

Airships are less tolerant to poor weather conditions. High winds, in particular, can make airships difficult to control, especially in ground proximity. They are sluggish flying machines difficult to manoeuvre in response to changing wind direction and situation on the ground. They sacrifice speed for endurance as compared to fixed-wing aircraft.

Helium is rare and very expensive. Availability and storage of the gas is a major concern. Use of airships will necessitate insurance of steady supply of the rare gas. Even for the aerostats presently in use by the Indian Air Force, procurement of the gas is a logistician's nightmare. The few known sources of supply are either in the U.S. or traders are located elsewhere. The irregular supply can breakdown naturally or by design. Limited sources of supply leave scope for coercion by the supplier's country. Storage, handling and distribution of the gas are linked issues, which deserve serious thought. The U.S. faced these problems while using tethered blimps to provide security surveillance at fixed locations in Iraq and then in Afghanistan.

In peacetime, the possibility of an airship being targeted from the ground with a hostile intent is as rare as a similar threat to a civil or a military aircraft. In times to come, however, such threat will deserve attention. If somehow air defence threats materialise in an otherwise *safe* environment, airships would need more time to exit the area and reach *safe airspace*. Less manoeuvrability would magnify such threats. In any case, if an airship were to be hit by ground fire, its survival would depend on the extent of damage. While evading imminent threats may be difficult for airships, their probability of survival after being hit may be much higher than the fixed wing aircraft and helicopters.

OVERCOMING HURDLES

The technology behind majestically soaring airships is more complex than it appears to be. The ship's weight reduces as fuel (used for propulsion) burns, creating an imbalance, and sending the ship further up into the atmosphere. Same effect is experienced when the cargo is *offloaded*. So, to

stay at a cruising level, ideally, the airship must release expensive helium gas into the atmosphere. This would result in continuously wasted gas, just to maintain altitude. Scientists have evolved a mechanism that would enable better altitude control without releasing the precious gas into the atmosphere. The development entails compression of helium gas in-flight to vary the overall buoyancy of the airship. Aeros' Pelican airship is one such project funded by the Pentagon's Rapid Reaction Technology Office and is likely to be used by the armed forces/ security agencies in the US.

The problem of availability of Helium gas may get addressed in due course of time as Mr. Pankaj Som Chaturvedi says that there are possible sources in the Gulf region. He adds that hydrogen is not as unsafe a gas as it is made out to be. Experiments are on to use hydrogen gas with abundant caution. Traces of helium gas were found during oil exploration undertaken in India; however, commercially viable quantities are not possible as yet.

Powerful propulsion systems will be required to overcome *sluggishness* and *low speed*. In addition to the piston engines (propellers), jet propulsion could be considered. Experiments could be carried out using the Total Technical Life Expired (TTLE) aircraft engines of suitable types to address the issue of propulsion.²²

Effect of wind may be countered to some extent. A solution may be found in the manner in which small but powerful *tugs* tow massive warships in the harbours. *Tugging/towing* could be an option for airships too. Air cranes or tilt-rotor aircraft could be used to *tug* airships.²³

Presence of airships, in the airspace already crammed with civil/ military aircraft, would lead to air traffic woes. This, however, is a manageable problem. Thoughtful planning and execution of projects can prevent congestion.

Cost is an issue. Some supporters of the airships argue that airships would cost less to purchase and operate than other aircraft. They cite, the significantly lower fuel consumption of airships relative to fixed/ rotary-wing aircraft. At this juncture, a comparison is difficult and unfair as technology is in an early stage of development. Because of uncertainty, cost estimates would be highly speculative. The cost must take into account the tangible and the intangible gains from the use of airships.

22. Such innovations/ modifications have been resorted to in the past. Packet aircraft were fitted with a jetpack to improve thrust. Rockets were fitted on to Hercules aircraft (Op Eagle Claw) to enable near VTOL capability. IIT Kharagpur has attempted generation of electricity using TTLE aeroengines.

23. Powered fixed wing aircraft have been used successfully to tow gliders, targets and banners.

CRYSTAL GAZING

Proposals have been put forward for hybrid airships that could accommodate large payloads. Airships carrying 20 tons (about the payload of a C-130 intra-theatre airlift aircraft) could operate independent of runways, slower than helicopters but with substantially larger payloads. Airships carrying 50 tons (about the average payload of a C-17 inter-theatre airlift aircraft) or more could complement today's strategic airlift aircraft and sealift ships.

If used as an *airborne aircraft carrier* like the USS Macon and the USS Akron, an airship would give impetus to search and rescue, and relief operations. Small fixed wing aircraft or helicopters operating from a large airship would deliver more tangible results than those operating from different bases scattered over a large area. It could save precious time during *Golden Hour Rescue*. Manned/robotic aircraft shuttling between the airship and multiple sites of disaster could bring in casualties; carry relief teams, medicines and food for the victims.

Airships would be worthwhile additions to the military's strategic airlift capability providing airlift over intercontinental distances. Their success and usefulness will depend largely on technological development and cost of operation. The future of airships as airlifters will also depend on whether there is a demand for increased deliveries before ships could arrive and whether there is a need to deliver cargo directly to locations that cannot be easily supplied with existing transportation systems.

PATH AHEAD FOR INDIA

Defence Research and Development Organisation (DRDO) has developed the Aerostat radar, which will help strengthen the air defence network of the armed forces and boost the country's surveillance and air defence capabilities. "*Nakshatra*" has been tested up to of 4.5 km altitude; it could carry 800-1000 Kg/ 17,000 cu m volume. Project is on drawing board stage. Once finalised, it will take 5 years to complete. 1 km/ 300 kgs payload has been tested.²⁴ The present developments in *lighter-than-air* airborne platforms are aimed at enhancing Intelligence, Surveillance and Reconnaissance (ISR) capability. It is time that parallel effort is devoted to acquiring airlift capability.

CONCLUSION

When one talks of airships, two images flash past the mind – one of a slow

24. "DRDO aerostat Akashdeep at Aero India," *India Strategic*, Mar16-Apr 15, 2011. p. 54.

majestically flying airship with a “Goodyear” logo and the other, of a burning Zeppelin (the Hindenberg disaster). Most have forgotten the effective and successful use of airships by the Germans for routine airlifts. Over 50 years have elapsed since the last military use of an airship. Use of airships was given up not because they were technically unsound but because of cost considerations in that era and fear of accidents due to the use of the inflammable hydrogen gas. We have soared miles ahead of the Hindenberg disaster. Now helium is in use and superior technologies and safety systems are in place. There is a need to re-look; there is a need to look ahead.

Consequent to discussion on a report prepared by 100 leading aerospace experts in late October 1984 at the National Research Council of USA for NASA, ten aircraft categories were identified as being best suited for the year 2000. Among others, categories relevant to this paper are firstly, a long-haul airlifter with 16,000 kms range and gross weight in half-million kg class, and secondly, an STOL or STOVL (short take-off and vertical landing) combat airlifter able to operate 24 hours a day in adverse weather.²⁵ Three decades down the line airships seem to meet some of those specifications.

In case of the U.S., fuel for transport aircraft represented nearly 40% of the Air Force’s energy costs in fiscal year 2009. It would be a similar ratio in case of most armed forces of the world. If airships prove to be as fuel efficient as expected, they might be able to operate at substantially lower cost than existing airlift platforms – a cherished advantage in these days of skyrocketing fuel prices. Besides, the use of airships will prolong the calendar life of the other airlift resources (fixed/ rotary wing aircraft).

Hybrid airships would probably be the preferred design for airlifters because they provide greater lift for a given gas volume and they can be easier to handle while near the ground, particularly during loading and unloading, when the total vehicle weight (aircraft plus cargo) changes substantially. Furthermore, airships would need to demonstrate sufficient dependability in day-to-day operations before they could be relied on to maintain continuous flows of cargo.

Airships will be environmentally sound as they would be “fuel-sippers” as compared to normal cargo aircraft. It is time that we set aside the disdain that airships have been looked at with, and reconsider exploiting them to advantage.

25. Air Commodore Jasjit Singh, *Air Power in Modern Warfare* (New Delhi: Lancer International, 1988), p. 267.

FORM IV (SEE RULE 8)

Statement about ownership and other particulars about newspaper (Air Power to be published in the first issue every year after the last day of February .*

- | | |
|--|--|
| 1. Place of Publication | New Delhi |
| 2. Periodicity of its publication | Quarterly |
| 3. Printer's Name | Air Commodore Jasjit Singh (Retd) |
| Nationality | Indian |
| (a) Whether a citizen of India? | Yes |
| (b) If a foreigner, the country of origin Address | Not Applicable
P-284, Arjan Path, Subroto Park, New Delhi 110010 |
| 4. Publisher's Name | Air Commodore Jasjit Singh (Retd) |
| Nationality | Indian |
| (a) Whether a citizen of India? | Yes |
| (b) If a foreigner, the country of origin Address | Not Applicable
P-284, Arjan Path, Subroto Park, New Delhi 110010 |
| 5. Editor's Name | Air Commodore Jasjit Singh (Retd) |
| Nationality | Indian |
| (a) Whether a citizen of India? | Yes |
| (b) If a foreigner, the country of origin Address | Not Applicable
P-284, Arjan Path, Subroto Park, New Delhi 110010 |
| 6. Names and addresses of individuals who own (Trust) the newspaper and partners or shareholders holding more than one per cent of the total capital | Forum for National Security Studies
P-284, Arjan Path, Subroto Park, New Delhi 110010 |

I, **Jasjit Singh**, hereby declare that the particulars give above are true to the best of my knowledge and belief.

Date: **March 2010**
* Journal

Sd/- Jasjit Singh
Signature of Publisher

INDEX

VOL. 1, NO. 1. MONSOON 2004 (JULY-SEPTEMBER)

1. A Great Leap Forward: Air Operations at Sea
Admiral Arun Prakash PVSM AVSM VrC ADC 1-11
2. The Trinity of Air Power: Doctrine, Strategy and Technology
Air Marshal Ajit Bhavnani AVSM VM 13-41
3. The Essence of Aerospace Power: What Leaders Need to Know
Col Dennis M. Drew USAF (Retd) 43-55
4. Air War in Kosovo
Air Marshal Vinod Patney SUYAM PVSM AVSM VM (Retd) 57-77
5. Air-land Warfare: The Imperatives of Jointness
Lt Gen V.G. Patankar PVSM UYSM 79-87
6. Air Power in Afghanistan War
Air Vice Marshal Kapil Kak AVSM VSM (Retd) 89-108
7. Pakistan's Nuclear Threshold and India's Options
Brig Gurmeet Kanwal (Retd) 109-124
8. China's Space Programme: An Overview
Sq Ldr K. K. Nair 125-156
9. Some Reflections on The IAF
Air Cmde Jasjit Singh AVSM, VrC, VM (Retd) 157-179

VOL. 1, NO. 2. WINTER 2004 (OCTOBER-DECEMBER)

1. Force Modernisation Planning Challenges
Air Cmde Jasjit Singh AVSM, VrC, VM (Retd) 1-28
2. Nine Decades of Air Warfare
Air Vice Marshal B.K. Bishnoi AVSM VrC & Bar (Retd) 29-48
3. Strategising Aviation Industry
Air Marshal S.R. Deshpande PVSM AVSM VM (Retd) 49-72
4. Future Wars and Aerospace Power
Air Marshal Vinod Patney SUYSM PVSM VM (Retd) 73-98
5. Naval Policy and Strategy of Pakistan
Cmdr.(Dr.) V. Sakhujia (Retd) 99-123
6. China's Aircraft Carrier Ambitions: Seeking Truth from Rumours
Prof. Ian Storey and You Ji. 125-146
7. Weaponisation of Space
Dr. Manpreet Sethi 147-167
8. Indo-Russian Cooperation in Military Aviation: An Overview
Air Marshal Bharat Kumar PVSM AVSM (Retd) 169-193

VOL. 2, NO. 1. SPRING 2005 (JANUARY-MARCH)

1. Network-centric Warfare: SME Fundamentals
Dr Prem Chand 1-24

INDEX

2. Space Theory and Doctrines <i>Sq Ldr K.K. Nair</i>	25-52
3. Air Power in Land Operations <i>Brig Gurmeet Kanwal (Retd)</i>	53-71
4. Satellite Imagery for Air Operations <i>Air Cmde D.N. Ganesh</i>	73-90
5. Russian Aviation Industry Trends <i>Dr Deba R. Mohanty</i>	91-112
6. Strategic Leadership: Defining the Challenge <i>Col. Michael Guillot USAF</i>	113-128
7. Pakistan's Space Capabilities <i>Sq. Ldr Ajey Lele</i>	129-148
8. Arms Trade Offsets: The Key to Energise Our Defence Industry <i>Air Cmde Jasjit Singh AVSM, VrC, VM (Retd)</i>	149-177

VOL. 2, NO. 2. SUMMER 2005 (APRIL-JUNE)

1. Precision Strike and Its Influence on Future Wars <i>Air Marshal V. Patney SYUSM, PVSM, AVSM, VM (Retd)</i>	9-24
2. RMA and Aerospace Technologies (Part I) <i>Air Cmde M.Matheswaran VM</i>	25-46
3. Kashmir, Covert War and Air Power <i>Air Cmde Jasjit Singh AVSM, VrC, VM (Retd)</i>	47-67
4. Air Power and Special Operations <i>Saikat Datta</i>	69-95p.
5. Mackinder in the Aerospace Age <i>Air Marshal Anil Trikha PVSM, AVSM, VSM (Retd.)</i>	97-117
6. Strategic Planning for the Air Force <i>Deborah L. Westphal, Richard Szafranski and Dr. Gregory S. Parnell</i>	119-139
7. Shrinking, Flourishing or Both? Global Defence Industry in Transition <i>Shri Deba R Mohanty</i>	141-160
8. Time: The Critical Dimension in War <i>Capt. Ajay Singh</i>	161-179

VOL. 2, NO. 3. MONSOON 2005 (JULY-SEPTEMBER)

1. Indo-US Relations in a Changing World <i>Shri K. Subrahmanyam</i>	1-21
2. IAF and UN Peace-keeping Operations <i>Air Vice Marshal Kapil Kak AVSM VSM (Retd)</i>	23-36
3. The Congo Diary <i>Ft. Lt. Charanjit Singh</i>	37-47
4. RMA and Aerospace Technologies (Part II) <i>Air Cmde M. Matheswaran VM</i>	49-71
5. Network-Centric Warfare <i>Gp. Capt Rohit Varma VM</i>	73-90
6. Merging Frontiers of Air and Space <i>Sqn Ldr K.K. Nair</i>	91-115
7. Planning to Win	

INDEX

- Lt Col (Retd) J.P. Hunerwadel USAF* 117-157
8. Nuclear Strategies in the Age of Missile Defences
Dr.(Ms) Manpreet Sethi 159-184

Vol. 2, No. 4. Winter 2005 (October-December)

1. Indian Air Force in the Evolving Security Environment
Air Chief Marshal S.P. Tyagi PVSM AVSM ADC 1-15
2. Joint Operations in Modern Warfare: Place, Role, and Impact of Air Power
Wg. Cdr Sartaj Bedi 17-33
3. Static Principles of War in a Changing World
Capt. Sanjay J. Singh 35-55
4. Planning Military Power for the Future
Air Cmde Jasjit Singh AVSM, VrC, VM (Retd) 57-72
5. Centres of Gravity: Relationship with Effects-based Operations and Campaign Planning
Gp. Capt A.S. Bahal 73-90
6. Air Power and Asymmetric Challenges to India
Gp. Capt T.D. Joseph VM 91-112
7. ISR for Air Operations
Air Marshal T.M. Asthana PVSM AVSM VM 113-128
8. ISR Doctrine, Technologies and Organisation for Air Operations
Air Marshal Bharat Kumar PVSM AVSM VM 129-154
9. China's Nuclear Command and Control
Lt. Cdr Stephen Polk, USN 155-174

Vol. 3, No. 1. Spring 2006 (January-March)

1. Joint Operations in Modern Warfare
Brig. M. Sabharwal SM 1-30
2. Brahmastra of Future Wars "The Brahmos"
Lt. Gen R.S. Nagra PVSM, VSM (Retd) 31-42
3. International Defence and Military Cooperation
Col. A. Muthanna 43-61
4. Trends in Defence Expenditure: India, China and Pakistan
Wg. Cdr V. N. Srinivas 63-82
5. Military Modernisation in China: Some Implications for India
Gp. Capt T.D. Joseph VM 83-109p.
6. Pakistan's Conventional Arms Acquisitions: Priorities and Prospects
Ms Shalini Chawla 111-133
7. Indian Civil Aviation: A Revolution in the Making
Gp. Capt R. Chidambaram (Retd) 135-150
8. In Search of High Ground: Air Power Trinity and the Decisive Potential of Air Power
Lt. Col David K. Edmonds UAF 151-177

VOL. 3, NO. 2. SUMMER 2006 (APRIL-JUNE)

1. Management of Our Defence: Role of the COSC
Air Cmde Jasjit Singh AVSM, VrC, VM (Retd) 1-28
2. Budgetary Reform for Sustained Modernisation
Shri Amiya Kumar Ghosh 29-58

INDEX

3. Indian Defence Industry: Insulation Gradually Melting <i>Shri A. Vinod Kumar</i>	59-84
4. Satellite Reconnaissance, ISR and Counter-measures <i>Gp. Capt A.S. Bahal</i>	85-101
5. UAVS: Capabilities and Trends: A Case Study of the USA, Europe and Israel <i>Wg. Cdr Rajiv Goyal</i>	103-131
6. Beyond Utility Targeting: Toward Axiological Air Operations <i>Lt. Col W.W. Wjninga and Col. (Retd) Richard Szafranski</i>	133-155
7. Ethics and Values in Military Leadership <i>Gp. Capt Arjun Subramaniam</i>	57-176

VOL.3 , NO. 3. MONSOON 2006 (JULY-SEPTEMBER)

1. Indo-US Strategic Relations: The Nuclear Dimension <i>Dr.(Ms) Manpreet Sethi</i>	1-26
2. India-China Relations: An Overview <i>Air Vice Marshal Kapil Kak AVSM VSM (Retd)</i>	27-47
3. China's War Concept <i>Brig. Gurmeet Kanwal (Retd)</i>	49-74
4. RMA with Chinese Characteristics <i>Brig. Vinod Anand (Retd)</i>	75-94
5. Doctrine, Strategy and Nuclear Weapons <i>Dr. Rajesh Rajagopalan</i>	95-108
6. Military Aerospace Supply Chain <i>Wg. Cdr Samir Chabra</i>	109-121
7. Indian Defence Procurement Policy <i>Wg. Cdr V.N. Srinivas</i>	123-138
8. The Epistemology of War Gaming <i>Prof. Robert C. Rubel</i>	153-178

VOL. 1, NO. 2. WINTER 2006 (OCTOBER-DECEMBER)

1. A Vision of India's Maritime Power in the 21 st Century <i>Adm Arun Prakash PVSM, AVSM, VrC, VSM, ADC (Retd)</i>	1-12
2. Strategic Role of Air Power: How we Need to Think, Train and Fight in the Coming Years <i>Gp. Capt Arjun Subramaniam</i>	13-32
3. Interpreting the Lebanon War of 2006 <i>Air Cmde Jasjit Singh AVSM, VrC, VM (Retd)</i>	33-61
4. Leveraging Space Capabilities for India's Defence <i>Air Vice Marshal D.C. Kumaria VM, VSM</i>	63-87
5. Defence Manpower in India: Some Salient Issues <i>Brig. Gurmeet Kanwal (Retd)</i>	89-107
6. Nuclear Security: Critical for Future Nuclear Expansion <i>Dr Manpreet Sethi</i>	109-134
7. Logistics Management Practices <i>Brig. Rahul K. Bhonsle (Retd)</i>	135-153
8. Has IT worked? The Goldwater Nichols Reorganisation Act <i>Mr. James R. Locher III</i>	155-182

INDEX

VOL. 2, NO. 1. SPRING 2007 (JANUARY-MARCH)

1. Future of Aerospace in India: Status and Strategy
Shri M.M. Pallam Raju 1-14
2. Aerospace Power and Integrated Operations
Air Marshal N.A.K. Browne AVSM, VSM 15-36
3. Strategic Roles of Air Power: Think, Plan, Equip and Train for IT
Gp. Capt. A.S. Bahal VM 37-56
4. Interpreting China's National Defence Policy
Brig. Gurmeet Kanwal 57-85
5. Offensive Air Power in the High Mountains
Gp. Capt R.G.Burli VM 87- 105
6. AWACS: The Pivot of Aerospace Power
Wg Cdr Atul Kumar Singh VSM 107-137
7. Pakistan's Defence Spending: Some Trends
Ms Shalini Chawla 139-157
8. The Essence of Coercive Power: A Primer for Military Strategists
Dr. Karl Mueller 159- 174

VOL. 2, NO. 2. SUMMER 2007 (APRIL-JUNE)

1. The Challenges Ahead for India's Foreign Policy
Shri Shivshankar Menon. 1-10
2. Strategic Reach - Strategic Depth and the Question of the IAF's Strategic Posture
Air Cmde Jasjit Singh AVSM, VrC, VM (Retd) 11-26
3. India's Nuclear Doctrine: The Basis for Credible Deterrence
Dr. Manpreet Sethi 27-56
4. China's ASAT Test: Implications and Options
Wg. Cdr K. K. Nair 57-74
5. Force Multipliers and Transformation of Air Defence
Wg. Cdr Atul Kumar Singh VSM 75-106
6. Military Power and Strategy of Iran
Shri Shelly Johny 107-132
7. US Defence Industry Trends
Dr. Ashok Sharma 133-156
8. The Impact of New Technologies in the Military Arena: Information Warfare
Capt. Paulo Fernando Viegas Nunes 157- 178

VOL.2 , NO. 3. MONSOON 2007 (JULY-SEPTEMBER)

1. Aerospace Power in a Changing National Security Environment
Air Chief Marshal F.H. Major PVSM, AVSM, SC, VM, ADC 1-12
2. Winning the Next War-Jointly
Air Cmde Jasjit Singh AVSM VrC VM (Retd) 13-28
3. Principles of War: Do They Require a Rethink?
Air Marshal A.V. Vaidya VM 29-44p
4. Effect-Based Operations
Air Marshal Vinod Patney SUYSM, PVSM, AVSM VrC (Retd) 45-58
5. From Winning to Deterring: China's Changing Discourse on Defence
Prof. Srikanth Kondapalli 59-74

INDEX

6. Pakistan's Nuclear Doctrine and Strategy
Dr. (Ms) Manpreet Sethi 75-109
7. Iranian Political System and the IRGC
Shri Shelly Johny 111-137
8. Russia's Air Defence Strategy
Wg. Cdr Atul K. Singh VSM 139-162
9. The Information-based RMA and the Principles of War
Major Leonard G. Litton, USAF 163-180

VOL. 2, NO. 4. WINTER 2007 (OCTOBER-DECEMBER)

1. Financing Force Modernisation
Shri Vinod K. Misra 1-11
2. Airspace Management: A Synergised Approach
Wg. Cdr Atul K. Singh VSM 13-35
3. Roles and Missions of the Indian Air Force-2032 AD
Air Marshal Vinod Patney SUYSM, PVSM, AVSM VrC (Retd) 37-55
4. Change and Continuity in Warfare: An Indian Experience
Brig. P.K. Mallick 57-77
5. Disinformation and National Defence
Air Marshal V.K. Verma AVSM, VM, VSM 79-94
6. Network-Centric Warfare and its Strategic Implications
Air Cmde M. Matheswaran VM 95-119
7. Leveraging Outer Space for National Security
Dr.(Ms.) Ranjana Kaul 121- 145
8. Pakistan's Nuclear Posture: Implications of Indo-US Cooperation
Prof. Peter R. Lavoy 147-174

VOL. 3, NO. 1. SPRING 2008 (JANUARY-MARCH)

1. National Governance and Internal Security
Shri N.N. Vohra 1-16
2. Joint Capability Requirements of India's Armed Forces: 2008-2033
Air Vice Marshal Kapil Kak 17-32
3. Military Manpower: Managing Quality and Costs
Vice Admiral Verghese Koithara 33-60
4. Defence Finance
Air Marshal A.V. Vaidya 61-76
5. Towards Continuous Military Education in the IAF: a Need for Yesterday
Wg. Cdr M. Misra 77-105
6. Space Security: Some Issues of Militarisation and Weaponisation
Wg. Cdr Kaza Lalitendra 107-135
7. Interface Between Conventional and Nuclear Deterrence: A Case for the Indian Subcontinent
Maj. Gen. G.D. Bakshi 137-157
8. False Gospel for Air Power Strategy? A Fresh Look at Giulio Douhet's "Command of the Air"
Michael D. Pixley 159-178

VOL. 3, NO. 2. SUMMER 2008 (APRIL-JUNE)

INDEX

1. Indian Air Force in the Decades Ahead <i>Air Chief Marshal F.H. Major PVSM, AVSM, SC, VM, ADC</i>	1-8
2. Force Structuring and Doctrines of the IAF <i>Dr. Bhashyam Kasturi</i>	9-25
3. Strategic Role of Air Power <i>Gp. Capt Sanjeev Bedi</i>	27-45
4. Electronic Warfare in the 21 st Century <i>Wg. Cdr Sanjay Poduval</i>	47-73
5. Modernisation of the Pakistan Air Force <i>Ms Shalini Chawla</i>	75-96
6. Inside the Labyrinth: NATO's Mission in Afghanistan and Continuing Relevance of Pakistan <i>Shri Shelly Johny</i>	97-122
7. Survivability of the Arsenal: The Essence of Successful Nuclear Deterrence <i>Dr Manpreet Seth</i>	123-146
8. Planning for Legitimacy: A Joint Operational Approach to Public Affairs <i>Major Tadd Sholtis</i>	147-168

VOL. 3, NO. 3. MONSOON 2008 (JULY-SEPTEMBER)

1. Aerial Warfare: the Indian Way <i>Air Marshal V.K.Verma</i>	1-13
2. Use of Air Power in Sri Lanka: Operation Pawan and Beyond <i>Air Cmde Arjun Subramaniam</i>	15-35
3. Army Aviation in India <i>Lt. Col Rajeev Ghose</i>	37-63
4. Dragon in Space: Implications for India <i>Wg. Cdr Kaza Lalitendra</i>	65-98
5. Nuclear Deterrence and Conventional War: A Test of India's Nuclear Strategy <i>Dr. (Ms) Manpreet Sethi</i>	99-118
6. Defence Procurement Challenges and New Paradigm Shift <i>Gp. Capt J.V. Singh</i>	119-144
7. Leveraging Offsets in Arms Trade: Options for India <i>Wg. Cdr V. N. Srinivas</i>	145-170

VOL. 3, NO. 4. WINTER 2008 (OCTOBER-DECEMBER)

1. The Rocky Road to Full Jointness <i>Benjamin S. Lambeth</i>	1-34
2. Indian Air Force: Building Indigenous Research Capability <i>Air Marshal T.M. Asthana (Retd)</i>	35-50
3. Why and How of Air Dominance <i>Air Marshal A.V. Vaidya (Retd)</i>	51-66
4. Pakistan's Navy: New Capabilities, New Roles? <i>Ms Shalini Chawla</i>	67-93
5. Weaponisation of Outer Space and National Security: Faultlines in the Law <i>Dr. G.S. Sachdeva</i>	95-115
6. Ballistic Missile Defence: Strategic Issues and Dilemmas <i>Wg. Cdr Anand Sharma</i>	117-149
7. Defence Transformation: An Appraisal <i>Brig. P.K. Mallick</i>	151-179

INDEX

VOL. 4, NO. 1. SPRING 2009 (JANUARY-MARCH)

1. National Defence and Aerospace Power
Air Chief Marshal Fali H. Major, PVSM, AVSM SC VM ADC (Retd) 1-5
2. Building Air Dominance
Air Marshal T. M. Asthana, PVSM, AVSM, VM (Retd) 7-21
3. Future Shape, Size and Role and Shape of Indian Air Force
Air Marshal P.K. Mehra, PVSM, AVSM VM (Retd) 23-42
4. Analysis and Assessment of Military Operational Requirement of AWACS in IAF
Wg. Cdr A.B.S. Choudhry 43-62
5. China's Space Power
Prof. Srikanth Kondapalli 63-78
6. Missile Defence: Concepts and Technologies
Wg. Cdr Anand Sharma 79-111
7. The Evolution of the Cruise Missile Discourse: A Conceptual Construct
Shri Sitakanta Mishra 113-140
8. Transformation in Military Logistics
Gp. Capt J.V. Singh 141-174

VOL. 4, NO. 2. SUMMER 2009 (APRIL-JUNE)

1. Employment of Aerospace Power: Regional Imperatives for Change
Air Chief Marshal Fali Homi. Major, PVSM SC VM ADC (Retd) 1-8
2. India's Tibet Problem
Shri Prem Shankar Jha 9-22
3. China's Air Force in the Coming Decades: Trends and Implications
Lt Col Rajiv Ghose, SM 23-50
4. Force Modernisation: Principles and Practice
Cmde. S. Sammadar 51-71
5. History and Evolution of Network-Centric Warfare
Wg Cdr Sanjay Poduval 73-97
6. Focussed and Dynamic Response Logistics
Gp. Capt J.V. Singh 99-132
7. Air Dominance: Concept and Practice
Air Marshal Vinod Patney 133-148
8. Air Dominance in 4th Generation and Irregular Warfare
Air Cmde Arjun Subramaniam 149-165

VOL.4, NO. 3. MONSOON 2009 (JULY-SEPTEMBER)

1. North Korea's Nuclear Tests
Shri Jayadeva Ranade 1-16
2. Six Decades of Peacekeeping
Wg Cdr E.R. Rajappan 17-51
3. Lowering the High Ground for Effect-based Operations
Wg Cdr Kaza Lalitendra 53-90
4. AWACS and Aerostats: Roles and Missions
Wg. Cdr A.B.S. Chaudhry 91-115
5. The Revolution of Cruise Missile Technology
Shri Sitakanta Mishra 117-143

INDEX

6. Review of the Defence Budget
Shri Amiya Kumar Ghosh 145-192

VOL. 4 NO.4. WINTER 2009 (OCTOBER-DECEMBER)

1. Implications of China's Navy Modernisation
Shri Jaydeva Ranadev 1-16
2. The Chinese Concept of Comprehensive National Power: An Overview
Dr. P.K. Ghosh 17-54
3. Integrated Perspective Planning
Air Marshal A.V. Vaidya PVSM, VM, (Retd) 55-71
4. Counter-Terrorism
Lt. Col. Rajiv Ghosh SM 73-100
5. CTBT Exhumed: Need India Worry?
Dr.(Ms) Manpreet Sethi 101-124
6. Military–Media Relations: Can the Media be a Force Multiplier?
Brig. P.K. Mallick 125-155
7. The Most Dangerous Nation
Dr. Amarjit Singh 157-176

VOL. 5, NO.1. SPRING 2010 (JANUARY-MARCH)

1. Air Power in Sub-Conventional Wars in the South Asian Region
Lt. Col Rajiv Ghose, SM 1-30
2. Towards 'Intelligent' Cruise Missiles: Contours of Innovation
Shri Sitakanta Mishra 31-54
3. Cyber Space Vulnerabilities and Challenges: Threats to National Security Dynamics
Wg. Cdr M.K. Sharma 55-90
4. NCW: the Double-edged Sword
Wg. Cdr Sanjay Poduval 91-115
5. Combat Support Operations in the Indian Air Force: A Historical Appraisal
Wg. Cdr A.B.S Chaudhry 117-135
6. Climate Change and National Security: Contrarian or Interrelated?
Wg. Cdr Manoj Kumar 137-152
7. India-Afghanistan Relations During the Soviet Intervention in Afghanistan
Dr. K.N. Tennyson 153-183

VOL. 5, NO.2. SUMMER 2010 (APRIL-JUNE)

1. On Air Power
Wg. Cdr K.K. Jumbo Majumdar 1-3
2. Air Dominance and the Future of Air Power
Air Cmde Jasjit Singh AVSM,VrC,VM (Retd) 5-24
3. Integration of MoD and Defence Planning
Wg. Cdr R. Venkataraman 25-51
4. Asia in the Debate on American Grand Strategy
Dr. Michael J. Green 53-72
5. Defence Cooperation: A Case Study of India and Singapore
Pankaj Jha and Rahul Mishra 73-96
6. Afghanistan and the American Strategic Perspective
Dr. Sanjeev Bhadauria 97-115

INDEX

7. Challenge for the Indian Military: Managing Ozone Depleting Substances
Wg Cdr Manoj Kumar 117-150
8. Geo-politics of the Gulf 1971-1991
Cmdr M.R. Khan 151-177

VOL. 5, NO. 3. MONSOON 2010 (JULY-SEPTEMBER)

1. Force Modernisation Challenges
Air Marshal PK Mehra PVSM, AVSM,VM(Retd) 1-16
2. Indigenisation of Air-Launched Weapons
Gp. Capt S. Bhanaji Rao 17-35
3. PLAAF in Transition 1979-93
Wg. Cdr Vishal Nigam 37-75
4. China's Electronic and Cyber Warfare Capabilities
Wg. Cdr Sanjay Poduval 77-111
5. Towards a Nuclear Weapon Free World: Indian Perspectives
Prof. Swaran Singh 113-128
6. National Security Mechanism and the HDO
Wg. Cdr R. Venkataraman 129-153
7. Technology: A Historical Perspective
Wg. Cdr A.K. Singh 155-183

VOL. 5, NO. 4. WINTER 2010 (OCTOBER-DECEMBER)

1. China's Defence Industry: Organisational Reforms
Wg. Cdr Vishal Nigam 1-30
2. Defining Strategic Culture
Wg. Cdr Arjan Sen 31-54
3. Likely Demands on Future Leaders
Lt. Col. Rajiv Ghose, SM 55-78
4. Deception in Strategic Thinking: a Diagnosis
Shri S. Rajasimman 79-105
5. India's Civil Nuclear Network: A Reality Check
Shri Sitakanta Mishra 107-132
6. Pakistan's Nuclear Delivery Systems
Ms Shalini Chawla 133-158
7. China's Military Strategy: Perspectives from the White Papers on National Defence
Ms Shikha Aggarwal 159-179

VOL. 6, NO. 1 SPRING 2011 (JANUARY-MARCH)

1. The Iranian Nuclear Issue: India's Response
Dr. Asif Shuja 1- 26
2. Interpreting China's Grand Strategy
Gp. Capt J.V. Singh (Retd) 27-57
3. Chinese Space Programme: Influence of Chinese Strategic Culture on its Development
Wg. Cdr. Manu Midha 59-103
4. Defeating Pakistan's Nuclear Strategy
Dr. (Ms) Manpreet Sethi 105-122
5. China's Aircraft Carrier Ambitions
Nan Li and Christopher Weuve 123-146

INDEX

6. Security Structures in the Gulf: Past and Present
Comde. M.R. Khan 147-173

VOL. 6, NO. 2 SUMMER 2011 (APRIL-JUNE)

1. Impact of Offset Policy on India's Defence Industrial Capability and Policy Issues
S. N. Misra 1-25
2. ATOMS FOR PEACE: Balancing the Promotion of Nuclear Energy and Non-proliferation
Hina Pandey 25-46
3. Chinese Defence Forces: Modernisation After 1980
J. V. Singh 47-78
4. Contours of India's Nuclear Safety
Sitakanta Mishra 79-114
5. Domestic Politics Surrounding the Iranian Nuclear Programme
Asif Shuja 115-142
6. Nuclear Weapons Proliferation in Asia: The Twenty-First Century Pattern
Yeon Jung Ji 143-168
7. Understanding China's Military Strategy: A Study of the PLAAF
Shikha Aggarwal 169-193

VOL. 6, NO. 3 MONSOON 2011 (JULY-SEPTEMBER)

1. Some Aspects of Our Wars in Future
Jasjit Singh 1-24
2. Air Power in Stability and Anti-Terrorist Operations
Arjun Subramaniam 25-52
3. Air Power as an Instrument of Coercive Diplomacy
M. Bahadur 53-68
4. The Barriers to Military Transformation
Rajiv Puri 69-92
5. China's Civil Aviation Industry
Vishal Nigam 93-112
6. Information Warfare: Elements and Forms
Rakesh Arora 113-144
7. The Changing Patterns of Global Climate Change Architecture
Dhanasree Jayaram 145-162
8. West Asia: Ongoing Conflicts and India
Sharad Srivastava 163-194

VOL. 6, NO. 4 WINTER 2011 (OCTOBER-DECEMBER)

1. How to Minimise the Proliferation Impact of Nuclear Deterrence
Sverre Lodgaard 1-28
2. Patterns of Insurgency: Strategies and Doctrines
A. V. Chandrasekaran 29-50
3. Effect of Weather and Terrain on Airlift Operations
Ashok K. Chordia 51-80
4. Training Future Environment Leaders
Manoj Kumar 81-104

INDEX

5. Political Islam, Democracy and Arab Spring
M. R. Khan 105-128
6. Nuclear Doctrine and Deterrence: A Chinese Perspective
S. Rajasimman 129-152
7. The Rise of China and South Korea's Strategic Flexibility
Yeon Jung Ji 153-169

VOL. 7, NO. 1 SPRING 2012 (JANUARY-MARCH)

1. K. Subrahmanyam and India's Strategic Culture
Shri Shivshankar Menon 1-12
2. The Resurgence of Naxalism: Implications for India's Security
S. Adhikari 13-38
3. New Frontiers of Military Leadership: Environmental Forays
Manoj Kumar 39-58
4. India-Iran Relations Under the Shadow of India-US Strategic Partnership
Asif Shuja 59-76
5. The Need for Strategic Change in Regional Powers'
Policy Toward Afghanistan for Political Stability
K.N. Tennyson 77-94
6. Rashtriya Rifles in Kashmir: India's Counter-Terrorism Force
Debalina Chatterjee 95-116
7. Shifting Strategies and Tactics of the US/NATO Forces and the
Taliban in the Present Afghan War
Shelly Johny 117-140
8. Self-reliance and Synergy in Aerospace Sector: The Road Ahead
S. N. Misra 141 -166
9. Air Dominance Over the Oceans
Jasjit Singh 167-188

VOL. 7, NO. 2 SUMMER 2012 (APRIL-JUNE)

1. India's National Security: Challenges and Issues
Shivshankar Menon 1-14
2. Robotic Air Logistics: A Transformational Capability in Warfare
Manmohan Bahadur 15-32
3. Revolution in Military Affairs
Raj Kumar Upadhyaya 33-48
4. Geo-Political Changes Driving China's Aviation Industry
Vishal Nigam 49-68
5. Decoding Cyber Terrorism: Towards a Culture of International Co-operation
M.K. Sharma 67-88
6. Siting of Indian Nuclear Plants: The Modus Operandi
Sitakanta Mishra 89-120
7. China's Naval Strategy: Strategic Evolution and Emerging Concepts of Warfare
Shikha Aggarwal 121-152
8. India-Iran Relations: Challenges Ahead
K.N. Tennyson 153-172
9. The Fissile Material Cut-Off Treaty: A Debate in Perpetuity
Hina Pandey 173-188

INDEX

VOL. 7, NO. 3 MONSOON 2012 (JULY-SEPTEMBER)

1.	India-China Relations: Problems and Prospects <i>Kanwal Sibal</i>	1-26
2.	Quality Fundamentals in Support of Air Power <i>P.V. Athawale</i>	27-54
3.	Social Acceptance of Nuclear Power in India <i>Sitakanta Mishra</i>	55-82
4.	Nuclear Aspiration as a Hedging Strategy: The Case of Iran <i>Yeon Jung Ji</i>	83-106
5.	China's Tibet Policy: Implications for India <i>Sana Hashmi</i>	107-124
6.	PLA: Military Operations Other Than War (MOOTW) <i>J.V. Singh</i>	125-152
7.	The Umbrella Politics <i>Debalina Chatterjee</i>	153-178

VOL. 7, NO. 4 WINTER 2012 (OCTOBER-DECEMBER)

1.	China in the Twenty-First Century: What India Needs to Know about China's World View? <i>Shyam Saran</i>	1-16
2.	A Defining Moment of the Debate: Manned versus Unmanned Platforms of Airpower <i>Manoj Kumar</i>	17-34
3.	Positioning of Israel with its Neighbours and Its Missile Defence System <i>Indrani Talukdar</i>	35-48
4.	Reforms in PLA Training <i>J.V. Singh</i>	49-72
5.	China's Military Space Programme <i>K.K. Nair</i>	73-106
6.	The Politics and Strategy of Environmentalism <i>Dhanasree Jayaram</i>	107-130
7.	Chinese Acupuncture in An Iaf-Paf Face-Off <i>Vikram Munshi</i>	131-156
8.	Nuclear Waste: India's Gordian Knot? <i>Sitakanta Mishra</i>	157-180

Note: For current issue see Contents Page.



RESEARCH FELLOWSHIPS – 2013-2015

Centre for Air Power Studies, New Delhi invites applications from Indian citizens for research fellowships to undertake a 2-year study on Indian defence and aerospace issues, including China's military modernisation and Pakistan's military, at three levels:

- (i) **Senior Fellow**, with a Ph.D. and over 5 years research experience or 15 years experience in defence;
- (ii) **Research Fellow**, with a Ph.D or 10 years experience in defence; and
- (iii) **Associate Fellow** with minimum 3 years experience in research or 5 years experience in defence.

Remuneration according to experience and expertise (within the scales of Rs. 14,300-450-22,400; 12,000-375-18,000 and 8,000-275-13,500 respectively).

Applications along with a Project Proposal of not more than 1,000 words must be sent to **Director General, Centre for Air Power Studies, P-284, Arjan Path, Subroto Park, New Delhi-110 010** not later than **March 31, 2013** by post or Email to (diroffice@aerospaceindia.org) complete with the bio-data giving full details.

NOTES FOR CONTRIBUTORS

Articles submitted to *Air Power Journal* should be original contributions and should not be under consideration for any other publication at the same time. If another version of the article is under consideration by another publication, or has been, or will be published elsewhere, authors should clearly indicate this at the time of submission.

Each typescript should be submitted in duplicate. Articles should be typewritten on A4/ Letter paper, on one side only, **double-spaced (including the notes)** and with ample margins. All pages (including those containing only diagrams and tables) should be numbered consecutively.

There is no standard length for articles, but 5,000 to 8,000 words (including notes and references) is a useful target. The article should begin with an indented summary of around 100 words, which should describe the main arguments and conclusions of the article.

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

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

Articles should be submitted on high-density 3~ inch virus free disks (IBM PC) in rich text format (RTF) together with **an exactly matching double-spaced hard copy** to facilitate typesetting; notes should be placed at the end of each page. Any diagrams or maps should be copied to a separate disk separately in uncompressed TIF or JPG formats in individual files. These should be prepared in black and white. Tints should be avoided, use open patterns instead. If maps and diagrams cannot be prepared electronically, they should be presented on good quality white paper.

Each disk should be labelled with the journal's name, article title, author's name and software used. It is the author's responsibility to ensure that where copyright materials are included within an article, the permission of the copyright holder has been obtained. Confirmation of this should be included on a separate sheet included with the disk.

Copyright in articles published in *Air Power* rests with the publisher.

STYLE

Authors are responsible for ensuring that their manuscripts conform to the journal style. The Editors will not undertake retyping of manuscripts before publication. A guide to style and presentation is obtainable from the publisher.

Current Journal style should be followed closely. Dates in the form January 1, 2000. Use figures for 11 and above. British spellings are to be used. Authors should provide brief biographical details to include institutional affiliation and recent publications for inclusion in About the Contributors. Sub-headings and sub-sub-headings should be unambiguously marked on the copy.

NOTES

Notes should be **double spaced** and numbered consecutively through the article. **The first line of a note must align with subsequent lines. Each note number should be standard size and have a full point.**

- a) References to books should give author's name: title of the book (*italics*); and the place, publisher and date of publication in brackets.
e.g. 1. Samuel P. Huntington, *The Common Defense* (NY: Columbia UP, 1961), Ch. 2, pp. 14-18.
- b) References to articles in periodicals should give the author's initials and surname, the title of the article in quotation marks, title of the periodical (*italics*), the number of the volume/issue in Arabic numerals, the date of publication, and the page numbers:
e.g., Douglas M. Fox, "Congress and the US Military Service Budgets in the Post War Period," *Midwest Journal of Political Science*, vol. 16, no. 2, May 1971, pp. 382-393.



AIR POWER

Journal of Air Power and Space Studies

Centre for Air Power Studies, P-284, Arjan Path, Subroto Park, New Delhi 110010



AIR POWER

Journal of Air Power and Space Studies

Centre for Air Power Studies, P-284, Arjan Path, Subroto Park, New Delhi 110010



SUBSCRIPTION FORM

In India

- Rs. 275/- per copy
 Rs. 1100/- per annum (4 Issues)

Overseas

- US \$ 35 per copy
 US \$ 130 per annum (4 Issues)

PLEASE PRINT

Name.....

Complete Address.....

.....

.....

.....PinPhone.....

Please find enclosed cheque/draft number: dated.....drawn
on favouring KW Publishers Pvt. Ltd.,
for Rs US\$

Please mail this form to: KW Publishers Pvt. Ltd., 4676/21, Ansari Road,
Daryaganj New Delhi 110 002 T: +91.11.23263498 / 43528107
E: knowledgeworld@vsnl.net W: www.kwpub.com



SUBSCRIPTION FORM

In India

- Rs. 275/- per copy
 Rs. 1100/- per annum (4 Issues)

Overseas

- US \$ 35 per copy
 US \$ 130 per annum (4 Issues)

PLEASE PRINT

Name.....

Complete Address.....

.....

.....

.....PinPhone.....

Please find enclosed cheque/draft number: dated.....drawn
on favouring KW Publishers Pvt. Ltd.,
for Rs US\$

Please mail this form to: KW Publishers Pvt. Ltd., 4676/21, Ansari Road,
Daryaganj New Delhi 110 002 T: +91.11.23263498 / 43528107
E: knowledgeworld@vsnl.net W: www.kwpub.com