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While dealing at length on the use of nuclear weapons, the author quotes Lt. Gen. K.M. Arif of Pakistan who states that both India and Pakistan are not crazy countries and if deterrence could work in other parts of the world, it was bound to work in this region as well. It was doubtful if either country would use nuclear weapons against each other. Discussing various stages of thresholds, Maj. Gen. Bakshi concludes that Pakistan's nuclear threshold has a very elastic bandwidth. The Kargil War has forced Pakistan into a flexible response strategy. If triggered, it will commence with a nuclear shot across the board and then graduate to a purely military use of nuclear weapons, first on its own soil and then on its adversary's.

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Michael D. Pixley rightly explains that while many interpreters have questioned Douhet's originality or the extent to which he was a pioneering theorist in a universal sense, the very hypothesis, when probed further, obscures the context of Douhet's similarities with other countries' air power pioneers. Douhet's most overt contextual limitations were his focus on Italy's unique geographic situation. He wrote as an Italian and tested his theories by applying them in Italy, notwithstanding Italy's protective Alpine barrier and short-flying distances from potential enemies. Pixley further adds that Douhet occasionally applied his theory to other countries which seemed to contradict his self-imposed geographical limitations, at least superficially. The author points out that while most air power analysts have ignored Douhet's biases and presuppositions, the overwhelming majority agrees that the framework of strategic thought that he created may be applied to any general war in the nuclear age.





EDITOR'S NOTE

Enduring peace, economic growth, and developments in the socio-economic sectors such as health, education, and infrastructure would always remain at the core of a developing nation's security environment. The ongoing economic growth has boosted the aspirations and expectations of the 1.1 billion plus population of this country, and securing the safety and overall welfare of our people would, thus, demand, a peaceful and stable security environment. Towards this objective, the denial and deterrence dividends provided by professional, well trained and appropriately equipped armed forces would make an enormous contribution.

The defence budget for the financial year 2008-09 at Rs. 105,600 crore has witnessed a 10 percent increase from the Rs. 96,000 crore allocation in 2007-08, by and large conforming to the average annual growth rate witnessed in the past decade. What is noticeable, however, is that for the first time after the India-China War of 1962, the defence budget as a percentage of GDP is likely to slide below 2 per cent this year. With increased allocations being made under the capital budget, the defence procurement procedures need skillful management, as these would have a direct impact on force modernisation, in addition to steering the defence offsets policy in the appropriate direction. Inability to fully utilise the funds under the capital budget has been a matter of concern for several years now. This is an area that requires more focussed attention of not only the armed forces, but the Ministry of Defence as well. In addition, due attention also needs to be paid towards establishing clear linkages between defence planning and budgeting. The existing loopholes in this vital area need to be plugged through suitably restructured mechanisms and procedures.

History tells us that intellectual assets and inputs have played a crucial role in statecraft and the profession of arms, when both were comparatively simple. Aristotle and Alexander, Chanakya and Maurya, Sun Tzu and the Chinese

emperors are all examples of repositories of knowledge who would analyse the events and actions in proximity to the decision-makers and share their assessment with them. Times have changed, but the principle that the leadership requires deep knowledge and intellectual rigour, based on an empirical understanding of facts, analyses of issues and data, remains valid. Our leaders of tomorrow would require quality education as a lifelong learning process. All these attributes would build aerospace leaders for the future and develop leaders into critical thinkers who would think and learn faster than the adversary, and through that process, dominate future operations. Managing the quality of military manpower, thus, remains a major challenge in the 21st century, when economic liberalisation and globalisation provide economically more lucrative options. The recommendations of the Sixth Pay Commission for central government employees are likely to be implemented in the current financial year. This has raised many expectations, particularly amongst armed forces personnel. Whilst an improved pay-perks package would enhance the quality of life, a lot more needs to be done, starting from reviewing engagement periods, training, a second career option and, most importantly, looking into the individual commitments within our societal paradigm, for stability of tenures for children's education, ageing parents and housing facilities.

The constantly shifting trends in the nature of war and growing possibilities of out-of-country contingencies or operations in a coalition environment constantly point towards more synergy in joint operations. Evolving a joint capability requirement for India's armed forces would remain an important issue in the coming decades. Integration of force multipliers and use of information technology to achieve such integration for higher and shared situational awareness pose new challenges. Efficiency of technology driven clinical operations would depend upon the coordination and cooperation amongst the three Services, in identifying the individual Service missions and objectives and also the areas of interfacing objectives in attaining the overall aim. The global/regional strategic environment, military capacity building and force employment doctrines need to be revisited. An effective joint doctrine, a long-term joint military net assessment, interoperable C4I2 framework and joint intelligence and logistics support

are indeed the need of the hour.

In contemporary power equations across the globe, and also because of the technological revolution in all spheres of military operations, achieving “Command of the Air” has become a very complex issue. In literal terms, it may only be possible for the US to achieve such command of the air, against forces with negligible air power resources. Although, even in those conditions, it may not come out unscathed. The world is in the midst of complex, ambiguous, asymmetric challenges and threats. To be able to successfully deal with these challenges in the current environment, our political leadership requires the widest range of military options and the highest degree of military power in all its forms. Hence, even as the relative equation of power among nations changes, there is more evidence to suggest that aerospace power has become the military instrument of choice in an uncertain world. What air power offers to the political leadership is the ability to reach far into the conflict zone from the outside and above, from the skies. This makes aerospace power an instrument of choice for the political leadership because it enables them to control the processes of escalation as well as the degree of engagement-disengagement while being able to apply coercive and punitive power. General Giulio Douhet’s concept of “Command of the Air” may have been limited to Italy, nevertheless it has travelled, as far as China, which proclaims the military doctrine of achieving command of the air in its future military conflicts.

NATIONAL GOVERNANCE AND INTERNAL SECURITY

N.N. VOHRA*

I feel privileged to have been asked to deliver the Admiral Ramdas Katari Memorial Lecture to remember the first Indian chief of independent India's navy.

I compliment the Indian Navy and the Navy Foundation for organising an annual lecture to commemorate the invaluable contribution of Admiral Katari. Thanks to the visionary foundations laid by him, the Indian Navy has, over the past decades, developed into a strong and versatile force which, today, safeguards our country's rapidly growing maritime interests across the high seas and beyond. I take this opportunity of paying tribute to the late Admiral Katari.

I have been asked to speak on national governance and internal security. At the very outset, I would like to stress that there is a crucial link between the two. If internal security is not maintained, governance cannot be delivered, and there would be grave threats to the very unity and integrity of the country. Likewise, internal security cannot be safeguarded if governance is delivered by an inefficient and corrupt administration.

It is perhaps not necessary to define governance. However, in the simplest terms, governance relates to the effective management of national affairs at all levels of functioning; guaranteeing the country's unity and integrity; and securing the safety and overall welfare of its people. For the attainment of these objectives, it would be essential that political, economic, executive and judicial

* The Katari Memorial Lecture delivered by Shri **N.N. Vohra**, special representative of the Government of India, former principal secretary to the prime minister, former defence secretary and home secretary, on December 7, 2007, at DRDO Auditorium, New Delhi, organised by the Navy Foundation. Published with the permission of the Navy Foundation, New Delhi.

The Preamble to our Constitution provides the key to its philosophy: it enshrines the sovereignty of the people and envisions a socialist, secular, democratic republic based on justice, liberty, equality and fraternity.

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authority is exercised in a manner which ensures that the people are enabled to enjoy their rights, discharge their obligations and resolve their disputes within the parameters of the Constitution and the Rule of Law.

Our exhaustive Constitution provides the basis of the relationship between the union and the states and delineates the legislative, judicial and executive framework within which the union and the states shall discharge their respective responsibilities for delivering governance. The Preamble to our Constitution provides the key to its philosophy: it enshrines the sovereignty of the people and

The principles of governance of our country are excellently enunciated in the chapter on Directive Principles of State Policy in the Constitution of India. It has been laid down (Article 37) that the provisions contained in this chapter shall be “fundamental in the governance of the country” and that it shall be the “duty of the State to apply these principles in making laws.”

The founding fathers of the Constitution of India were acutely aware that political democracy would have no significance unless it was accompanied by social and economic democracy. It was their belief that, within the democratic framework, clean and efficient governance would transform the social, economic and political life of our people and build a strong, prosperous and vibrant nation. The Directive Principles, described as the “core” or the “conscience” of our Constitution, provide the goals and guidelines which, if vigorously pursued and timely implemented, would have led to removing the inequalities and disabilities suffered by large segments of our society and, thus, paved the way for the achievement of social and economic justice.

We have still to traverse a very long distance to achieve our nation-building

goals. About a quarter of our population still lives below the poverty line. The persistence of large-scale poverty and illiteracy, the lack of employment, shelter, clean drinking water, basic sanitation and health care, food and nutrition, and the yawning gaps in the achievement of various other vital developmental targets manifest the serious failures of national governance. The default in achieving social and economic justice has perhaps been the most signal failure.

The failures of governance have led to the recognition that governance shall become honest and effective, and inequalities shall start reducing when the people are empowered and the communities are enabled to manage their own affairs. In this context, the 73rd and the 74th Amendments to the Constitution provide the constitutional mandate for the provision of self-governance through the establishment of duly empowered rural and urban local self-governing institutions. It is a matter for deep regret that the states have still to evince the required political will to effectively pursue the path of democratic decentralisation.

Thus, today, in large parts of the country, the people's sovereignty still means no more than the right to exercise their vote whenever elections are held. It is, however, a matter for enormous satisfaction that, despite failures on various fronts and despite the serious shortcomings of the electoral processes, the spirit of democracy stands deeply rooted in our country.

Among the many reasons for the continuing failures of governance, a significant factor has been the instability of the political regimes in the states from around the late 1960s, and at the Centre in the past decade and a half. From 1989 onwards, there were six governments at the Centre in less than a decade. It has also been seen that frequent elections have not invariably engendered conclusive outcomes. In recent years, no single party or pre-poll alliance of parties has succeeded in securing a clear majority. Unstable coalition

Among the many reasons for the continuing failures of governance, a significant factor has been the instability of the political regimes in the states from around the late 1960s, and at the Centre in the past decade and a half.

governments in the states, perennially occupied in combating threats to their survival, have failed to deliver effective governance.

While, because of the time constraint, I cannot comment on governance in the past six decades, it may be relevant, particularly considering the subject of this lecture, to observe that, over the years, the politicisation of caste and communal identities has led to divisiveness and disruption of the national ethos. The failure of the electoral system to prevent anti-social, communal, undesirable and even criminal elements from contesting and winning elections has contributed to the progressive decline of the polity and the consequential failure of the state Assemblies and the Parliament to effectively discharge their vital constitutional roles.

Consequent to the 1993 serial bomb blasts in Mumbai, on the direction of the prime minister, a committee was established to enquire into certain aspects of the bombings. In September 1993, this committee, generally referred to as the Vohra Committee, had reported the existence of a deep nexus between political personalities, public servants and crime syndicates. As per the director, CBI's (Central Bureau of Investigation's) report to this committee, "All over India, crime syndicates have become a law unto themselves. Even in the smaller towns and rural areas, muscle men have become the order of the day. Hired assassins have become part of these organisations. The nexus between the communal gangs, police, bureaucracy and politicians has come out clearly in various parts of the country." Quoting the director, Intelligence Bureau, the committee reported that the mafia network is "virtually running a parallel government, pushing the state apparatus into irrelevance" and that in certain states "these gangs enjoy the patronage of local politicians, cutting across party lines, and the protection of functionaries..... Some political leaders become the leaders of these gangs/armed senas and, over the years, get themselves elected to local bodies, state Assemblies and national Parliament." By all accounts, over the past decade and a half, this criminal nexus has enlarged and extended its reach.

Governance has been adversely affected also because political leaders remain incessantly preoccupied with the narrow, sectarian and partisan interests of their parties and the pursuit of day-to-day political gains and have no time or patience

to attend to the crying needs of the common man. The failure of the political executive to devote sustained attention to its constitutional responsibilities has led to the governmental functioning in the states being marred by gross delays, inefficiency, insensitivity, unaccountability and pervasive corruption.

Today, thanks to the information technology revolution and the fast spreading reach of the media, the awareness and expectations of the average citizen have been significantly enhanced. This has, correspondingly, generated much deeper dissatisfaction with the failures of governance. Unless urgent and ruthless steps are taken to check maladministration and corruption, the anger and disgust of the common people, particularly the disadvantaged and oppressed elements, could lead to their alienation. And past experience has shown that alienated elements can be easily lured to adopting the gun culture and joining unlawful networks whose activities cause serious public disorders.

In the past decade and more, despite the constraints of governance under coalition governments, the rate of the country's economic growth has been consistently higher than at any time in the past. It is heartening to observe that the new economic strength is being utilised to significantly enhance the investments in human development and poverty eradication programmes and for the execution of varied schemes for improving the quality of life of the common man.

In the obtaining environment of steady economic growth and dynamism, the interest of foreign governments, companies, investors and entrepreneurs has been growing steadily. Quite understandably, foreign investors would keep a close watch on the situation in our country, to be assured of the security of their assets and holdings. In this context, national governance has the super-added responsibility of ensuring that internal security is effectively maintained to promote our growing international trade and business interests which are vital for the steady growth of our economy.

Let us now take a quick look at the constitutional position in regard to national security management in our country.

The safeguarding of national security encompasses eternal vigilance to meet every threat to the Indian state from every possible source within the country

India's internal security problems, arising from varied sources, are influenced by a host of factors among which are its past history, geography, colonial legacy.

and from anywhere across its land or sea borders or from across the air space.

Broadly speaking, national security would comprise external security i.e. safeguarding the realm against any external threat, and internal security i.e. maintenance of security within the entire country. National security management would also encompass employment, food, water and shelter security; fiscal and economic security; energy, science, technology and

environment security; cyber security, *et al.* However, for the purpose of this lecture, I shall speak only about issues relating to internal security management.

For appreciating the implications of internal security, it may be useful to keep in mind the physical parameters of our concerns which, while being generally well known, are invariably forgotten.

India is the seventh largest country in the world with an area of about 33 lakh sq km. It has land boundaries of 15,200 km, over 600 island territories, a coastline of over 7,500 km and an exclusive economic zone (EEZ) of 25 lakh sq km. We have land frontiers and maritime boundaries with half a dozen neighbouring countries. Except for some of our hinterland states, e.g. Haryana and Madhya Pradesh, all other states and some of the union territories have one or more land or sea borders which require to be guarded. Our borders with Pakistan and China are militarised; those with Pakistan have generated a variety of threats ever since independence.

While discussing India's security concerns, it would be also useful to remember that our country represents an immense cultural and geographical diversity and socio-religious traditions which go back to 5,000 years of recorded history. The well over a billion people of India comprise multi-racial, multi-religious, multi-lingual and multi-cultural societies. We have 22 major languages and over 1,500 dialects. Every major religion in the world is practised in India. The roots of India's secular and pluralistic traditions are embedded deep in our ancient history.

India's internal security problems, arising from varied sources, are influenced by a host of factors among which are its past history, geography, colonial legacy,

a burgeoning population, sharp social and economic disparities and complex socio-cultural and ethno-religious traditions which interplay freely in our secular democracy. As events in the past decades have shown, regional and global developments have also been impacting significantly on our security concerns.

Under our Constitution, “Public Order” and “Police” are included in the state List (List II, Seventh Schedule). Consequently, for maintaining internal security the states have exclusive powers [Article 246(3)] to make laws and take all necessary executive action in respect of both the aforesaid subjects. Thus, in the normal circumstances, the states are responsible for maintaining internal security within their jurisdictions.

As regards the Centre’s responsibility, the Constitution prescribes (Article 355) that it shall be the duty of the union to protect the states against external aggression and internal disturbances and to ensure that the governance of every state is carried on in accordance with the constitutional powers, failing which Presidential Rule may be imposed (Article 356) in the defaulting state, till constitutional functioning can be restored. The Constitution also provides (Article 352) for the enforcement of emergency if a situation exists or there is an imminent danger of the security of India being threatened by war or an armed rebellion.

Looking back, from 1947 onwards, the country has faced varied internal security problems.

Looking back, from 1947 onwards, the country has faced varied internal security problems. Some of the more serious threats have emanated from Pakistan’s unceasing efforts to seize Jammu and Kashmir (J&K) and its sustained strategy to create chaos and disorder to destabilise and “break up” India.

India has been facing increasing internal security threats in the past years and, as of today, public order in about 40 per cent of the districts is seriously affected by insurgencies, terrorist activities or political extremism. From around the early 1980s, Pakistan’s Inter-Services Intelligence (ISI) succeeded in launching terrorist activities in Punjab which suffered enormous human and economic losses for over a decade, till the situation was normalised. Benefiting from the experience

gained from its foray into Punjab, Pakistan launched a proxy-war in J&K in end 1989. Over the past nearly two decades now, the continuing wave of terrorism has resulted in the loss of thousands of innocent lives, ruined the economy and, worst of all, and shattered the historical secular fabric of Kashmir. In the northeast region, several states have continued to face varying insurgencies, many of which have been accentuated by the ISI's cross-border networks. The illegal immigration from Bangladesh has led to a demographic upheaval and generated serious communal, political, social and economic tensions and conflicts in several areas of the northeast region.

Instigated by the Pakistani ISI, and spurred by domestic factors, there has been a steady increase in the growth of pan-Islamic militant outfits which have been preaching fundamentalism and spreading subversion and violence. Over the years, the reach of these networks has spread to areas in central and south India.

The left-wing extremist groups, specially the People's War Group and the Maoist Communist Centre, have been continuing to enlarge their violent activities which have progressively spread to cover vast tribal areas in several states.

Several organised crime and mafia groups have linked up with the Pakistani ISI supported networks and progressively extended their criminal, subversive and communal activities. The narcotics and drug mafia outfits, also involved in the smuggling of weapons, RDX and other materials for causing death and destruction, have been carrying out large scale *havala* and money laundering operations. The enormous funds generated by the unlawful activities of these groups have been utilised for spreading Islamic fundamentalism, creating violence and executing terrorist activities. Serious threats to internal security have emerged from the ISI linking up with organised crime and mafia outfits and exploiting this nexus to organise major violent incidents in various cities of India, virtually at their will.

For the past nearly three decades now, ever since Pakistan's initial venture to foment militancy in Punjab, the Centre has been kept incessantly engaged in dealing with serious internal security problems in the northeast region, Punjab, J&K, in the various states affected by the activities of the Naxalite groups and in all the areas affected by violence caused by Islamic fundamentalist groups. The

restoration of normalcy in any disturbed area has inescapably involved the application of coercive power which, in other words, means the deployment of the required strength of central police forces and, as required, contingents of the Indian Army.

From the experience gained in combating militancy, insurgencies and terrorist activities in the past years, it has become abundantly clear that the responsibility of the disturbed states does not end merely with the deployment of state or central police forces, or even the army, to restore the disturbed area to normalcy. The armed forces of the union are deployed in aid of the civil authority and, constitutionally, the concerned state remains entirely responsible till normalcy is fully restored.

It is necessary to recognise that the deployment of central police forces, or the army, for carrying out anti-insurgency/terrorist operations may not yield the expected outcome unless the entire state administrative machinery, led by the chief minister, devotes continuous organised attention to sensitively dealing with the root causes which contributed to the breakdown of public order. Time bound initiatives would need to be implemented to identify and resolve the social and economic problems or the political demands and aspirations of the agitating groups. Simultaneously, the entire state administration apparatus would require to devote close and continuous attention to providing effective governance, systematic attention being paid to resolve the day-to-day difficulties faced by the common man, particularly those which may have emerged on account of the ongoing disturbed situation. Instead of slackening its functioning on account of the prevailing disturbed environment, the administrative apparatus shall need to work overtime to ensure that all socio-economic development and poverty alleviation programmes are implemented with high efficiency and honesty and within an urgent time-frame.

To timely deal with arising internal security problems, the state governments need to exercise constant vigilance, particularly in regard to the resolution of complex pending issues, and launch prompt initiatives to open meaningful dialogues with the leaders of the aggrieved groups or communities. Past experience has shown that very high human and economic costs have to be paid

Besides the gross failures of governance to pursue the avowed welfare-state goals and deliver social and economic justice to the masses, there has also been failure to timely and sensitively respond to the felt needs and aspirations of ethnic and tribal communities.

if there is a failure to timely deal with issues which can lead to conflicts and violence. The situation is further complicated when a violent agitation, arising from a sensitive demand, is dealt with merely as a law and order problem and the disturbance sought to be quelled with the application of force. In many such cases, the agitating elements are supported and incited by adversary external agencies and, when this happens, we see the beginning of much larger problems.

The deep despair and consequent alienation of the disadvantaged communities is heightened by the social, economic and political exploitation to which they are subjected. Feudal systems continue to exist in several parts of the country where the much needed land, agrarian and other reforms have still to be carried through. It is indeed most unfortunate that despite the economic disparities and severe disadvantages from which they suffer, the neglected and oppressed segments of society are further subjected to continuing harassments which arise from the various political parties exploiting religious, ethnic and caste factors merely to secure electoral gains.

Besides the gross failures of governance to pursue the avowed welfare-state goals and deliver social and economic justice to the masses, there has also been failure to timely and sensitively respond to the felt needs and aspirations of ethnic and tribal communities, most of whom live in remote, difficult and harsh areas. The demands of such neglected communities have been ignored for prolonged periods and if and when any ameliorative action has been taken, it has happened essentially to secure an envisaged electoral gain for the party in power. Such failures of governance have promoted enhanced distrust and alienation among the neglected communities, which no longer have any faith or trust in their state governments.

The poor and neglected people have many other reasons to be angry and frustrated. For example, the large outlays provided to the states for poverty alleviation schemes are not timely or fully utilised. In many cases, the funds are diverted to other purposes or even embezzled. Such gross failures result in despair, cynicism and deep-seated alienation among the poorest segments of society.

Failures of this kind arise from continuing maladministration, unaccountability and corruption. Despite endless public criticism in the past several decades, effective steps have still to be taken to deal with corruption at the highest levels and to enforce efficiency, honesty and accountability in the functioning of governmental and public institutions. The Lok Pal Bill has been awaiting enactment for the past nearly four decades now and the functioning of the Lok Ayukts, established in many states, has still to see even the known crooks being brought to book. Needless to stress, if good governance is to be delivered, perhaps the most crucial challenge shall be to restore ethical and moral values to public life in our country.

Corruption erodes and weakens the very foundations of the administrative and legal framework and disrupts the Rule of Law. Thus, internal security cannot be safeguarded unless the governmental apparatus is rid of corruption.

Corruption has the subversive effect of destroying discipline. And indiscipline leads to the unaccountability which has permeated the administrative apparatus and also led to the growth of the threatening politico-bureaucratic-criminal nexus about which a reference was made earlier.

Efforts to reduce corruption do not invariably yield the expected outcome as most of the tainted elements enjoy the patronage and protection of their political masters who have placed them in key positions and continue to use them for the execution of their unlawful behests. As I had stated earlier, from the perspective of effective internal security management, it is a matter for deep concern that even persons of highly questionable integrity, who may have

Corruption has the subversive effect of destroying discipline. And indiscipline leads to the unaccountability which has permeated the administrative apparatus.

close linkages with criminal and anti-national elements, continue to hold responsible positions in the administrative system. The potential of such elements subverting national interests from within the system poses a most serious threat to the security of the state.

The continuing determined efforts of adversary external agencies to destabilise India by spreading religious fundamentalism, inciting tensions which lead to conflicts, and perpetrating violence and subversion, have generated challenges which impinge on issues of external security management. In this context, it needs being recognised that issues relating to the management of internal and external security have got inextricably interwoven and, as such, the Centre would need to evolve a holistic approach to internal security management, in close coordination with the states. I would reiterate that in the security scenario which has evolved over the past three decades and more, it would be impractical, in fact, extremely hazardous, to deal sectorally with the management of internal and external security issues.

Internal security cannot be maintained satisfactorily in the country unless the states effectively discharge their constitutional duty of maintaining peace and public order in their realms. The states cannot pass on this crucial responsibility to the Centre, as has been the continuing trend in the past years. A signal failure of the states has been the continued neglect and the political exploitation of their police organisations. This has most adversely affected the discipline, morale, efficiency, honesty and trustworthiness of the constabulary. It is essential that every state undertakes a time-bound programme to enlarge, train and equip its police to effectively manage the existing and emerging challenges as well as to provide very strong support for the implementation of the Centre's initiatives to maintain public order in the entire country.

It may be noted that a stable security environment cannot be engendered merely by promulgating new laws. In the ultimate analysis, every citizen must discharge his duty to uphold and protect the sovereignty, unity and integrity of the country. It is indeed unfortunate that while the vast majority of our educated people are concerned only about their Fundamental Rights, there are not very many who are even aware of their Fundamental Duties, laid down in Article 51A

of the Constitution. Even if action were to be taken to enforce the Fundamental Duties of our citizens, it would be unsound to assume that the citizenry of India shall be overnight imbued with patriotic feelings to protect national interests if the environment in which they live and work continues to be vitiated by discrimination, corruption and injustice. The requisite environment can be engendered only if the states perpetually demonstrate and ensure that the laws of the land apply equally to the rich and influential and the highest placed public servants. Side by side, it must be particularly ensured that no injustice is done to the poor and the disadvantaged segments of society as this would result only in promoting distrust and despair among the masses and further eroding their loyalties.

In the aforesaid context, it has also to be noted that lawlessness cannot be controlled and internal security maintained unless the entire framework of the criminal justice system functions with speed, fairness and transparent honesty. In 2005, of the over 23 million cases awaiting disposal in the country, over 7 million IPC (Indian Penal Code) crime cases were pending trial. The ever increasing number of criminal cases awaiting investigation and trial and the correspondingly declining conviction rates have generated the growing public perception that crime is a “low-risk, high-profit business.”

Besides the enormous logistical inadequacies in the justice delivery system the integrity of the magistracy and the subordinate judiciary is seriously tainted. In the recent past, serious allegations of questionable integrity have been raised even against those who man the superior echelons in our judicial structure. Needless to say, the most urgent measures need to be taken to clean up the justice administration apparatus, and enlarge and strengthen it to deliver speedy and effective justice. Another cause for serious concern is that while we continue to have hundreds of altogether obsolete and irrelevant laws, most of which were enacted during the colonial period, we do not have an adequately stringent law, applicable all over the country, which can effectively meet the requirements of dealing with terrorist offences, cyber crimes and the fast growing areas of organised criminality which pose a grave threat to national security. We also do not have a Federal Crime Agency which can deal with the serious offences

Today, terrorist and criminal networks operate in a border-less world.

committed by criminal networks whose activities may spread across the states, across the entire country and across various foreign lands. We also need a comprehensive law for dealing with serious economic offences which, if not timely checked, have the potential of disrupting the national economy. Today, terrorist and criminal networks operate in a border-less world and, needless to say, the grave challenges posed by their activities cannot be tackled if the various concerned law enforcing agencies continue to operate within their respective limited jurisdictions. What are urgently required are an appropriate legal framework and an extremely well considered strategy which is executed in the most effective coordination between the Centre and the states, to deal with each and every aspect of internal security management.

Another matter for serious concern relates to the failure, over the past six decades, to develop a pool of functionaries who have been especially trained to manage the security apparatus at the Centre. Only the Intelligence Bureau has a sub-cadre of deputationist Indian police officers who, after acquiring the required experience, comprise the core of the bureau and can spend their entire careers in this agency. The Research and Analysis Wing (R&AW), the agency for external intelligence, has been facing serious personnel problems and recently there have been a number of incidents of grave professional failures. As per the continuing practice, the officers assigned to posts in the Home Ministry, drawn from various services and cadres, are not required to possess any past experience in the field of security management. The situation in the states is much worse. It is a matter for deep concern that despite the serious challenges to national security faced by the country, it has still not been recognised that security management cannot any longer be entrusted to persons who have no training or experience in this field. It is also no longer viable to entrust the work of intelligence agencies only to officers of one particular service. It is necessary that very high priority is accorded for raising a pool of adequately trained and trusted officers who can be assigned to posts in the intelligence agencies and the departments and ministries which are responsible for managing internal and

external security. In the aforesaid context, particularly keeping in view that even key posts in the Home and Defence Ministries and their related agencies are, on many occasions, assigned to functionaries who have no prior experience of working in the security administration arena, I had proposed (in the Task Force Report on Internal Security, September 2000) that the government may consider the establishment of a dedicated security administration cadre comprising officers selected from among volunteers from the civil and police services, defence services, defence science research organisation, science and technology, information and communication technology, broadcasting and media and other relevant areas. It was envisaged that such a pool of officers, in various age groups, would be properly trained and assigned to posts in the security management machinery. After critically assessing their performance, the selected officers could be allowed, as is done in the Intelligence Bureau, to enjoy open-ended tenures so that, over time, they acquire the much needed professional expertise which is sorely lacking in the existing set-up. It was projected that once such a dedicated cadre gets adequately established, the government would be able to select the most suitable officers, from within this pool of officers, to man posts at given levels in the Union Home Ministry, the intelligence agencies, National Security Council Secretariat, Ministry of Defence and other security management related areas. Side by side, the states could be provided required support, particularly well designed training facilities, to raise similar cadres. The government had approved the aforesaid approach in early 2001. Nearly seven years have since elapsed. It is apparent that the government does not intend to terminate the continuing practice of even the top most posts in the security apparatus being filled by persons who have no past experience in security management.

I would conclude by saying that considering the extremely worrying scale and pattern of the internal security failures in the recent past, the Centre shall need to significantly enlarge the capacity of its intelligence agencies, and to also ensure that the states take similar action, so that a constant vigil can be effectively kept across the length and breadth of the country. The Centre would also need to most vigorously pursue the states to ensure that the functioning of their police

forces is completely depoliticised and their autonomous working entrusted to the best available officers, known for their integrity and professionalism. The speediest possible measures must also be taken to revive the criminal justice system and restore its credibility. It is equally important that the state chief ministers urgently bring themselves around to fully understanding the altogether grave consequences if they fail to maintain peace and order within their jurisdictions or dither in providing total support and coordination to the Centre's initiatives to make the management of internal security more effective.

And finally, I would reiterate that effective enforcement of the Rule of Law is crucial to the maintenance of national security and delivery of good governance. Any threat to the constitutional values shall pose a threat to the very foundations of our polity and society and, consequently, to the very unity and integrity of our country.

JOINT CAPABILITY REQUIREMENTS OF INDIA'S ARMED FORCES: 2008-2033

KAPIL KAK

*Victory smiles upon those who anticipate the changes
that occur in the character of war, and not on those
who adapt themselves after the changes have occurred.*

—*Gulio Douhet*

Even as one respects Gulio Douhet's sagacious words, clearly the initiatives in strategic transformation for realising joint military capabilities envisaged over decades-long timescales tend to self-limit the 'transformational' nature of a complex process. In fact, a messianic overemphasis on radical transmutation may be tantamount to what Karl Popper, in another context termed "utopian engineering."¹ Perhaps a piecemeal engineering of step-by-step change or incremental transition, anchored in the reality that India's military is engaged, by mandate, in territorial/home defence, and will likely be involved in this primary mission for many years ahead, even as internal security and out-of-country contingency operations constitute role-additionalities, may suit the armed forces better.

Building military capability is a highly challenging task at the best of times in view of the changing strategic, technological and operational environment, and

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1. Stephen Ryan, *The Transformation of Violent Intercommunal Conflict* (Burlington: Ashgate Publishing Company 2007), pp. 26-27.

Building military capability is a highly challenging task at the best of the times in view of the changing strategic, technological and operational environment.

the variable of resource-cum-funding support. Evidently, single Service capability optimisation constitutes the first step towards evolving a synergistic development and employment model for both home defence and out-of-country contingencies. Developing military capacity, thereafter, in common joint spaces, assumes yet greater complexity as it raises the need for a joint vision, a joint military net

assessment, a joint doctrine and joint operational procedures. Comparing the results envisaged with actualities on land, at sea and in the air, and, thus, avoiding unintended consequences, may perhaps be the judicious way to proceed.

This paper seeks to outline the joint capability required by the Indian armed forces for territorial defence in the light of the conflict spectrum and trends in contemporary warfare in a nuclearised environment. The responsibilities India would have to shoulder in the regional strategic environment and the challenges it would confront as it develops and sustains comprehensive national power during the quarter century 2008-33 (five Plan periods) would be a related dimension. Interestingly and significantly, the concluding point of the timeline coincides with the completion of the centennial of the Indian Air Force (IAF).

GLOBAL/REGIONAL STRATEGIC ENVIRONMENT

The world is in a state of dynamic equilibrium and would perhaps remain so for a couple of decades. Conflict, competition and cooperation coexist, as do deterrence and interdependence. The *portmanteau* "co-opetition" coined by Allen Brandenburger (Yale) and Barry Neilbuff (Harvard) in their 1999 book of the same title describes pithily a world order in which the security and foreign policies of nations would be configured on purely national interest-driven, issue-based and function-specific imperatives.

An existential polycentric global order that currently is imbued with a distinct unipolar-centricity is expected to prevail over the next 25 years. By that time, the centre of gravity of world strategic balance would have shifted unalterably to

Asia, not unlike the mid-18th century, when India and China accounted for nearly half the world's gross domestic product (GDP). Trends in multilateralism, the strengthening of its institutions, including a restructured United Nations (UN), with India as a member of the reconstituted Security Council, would provide India many challenges and opportunities.

Multilateral politico-economic and security-related groupings viz ASEAN Regional Forum (ARF), Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC), India, Brazil, South Africa (IBSA), etc serve to provide a security balance which India could gainfully leverage. Non-governmental organisations, the media and the international community would increasingly acquire far greater clout on issues of conflict and peace. India's unique geo-strategic location, expected GDP growth rates of 9 to 10 per cent and increasing global acceptability and legitimacy constitute a unique advantage that would likely sustain for years. Being widely perceived as a prospective stabilising influence in Asia, India's strategy of national interest-driven multi-alignment with all the great powers and major global players – friendship with all, alignment with none – to balance any single-dominant power designs is unquestionably sound.

It is India's immediate neighbourhood that would continue to be a cause for concern due to its 'instability' and proclivity to bouts of volatility, a situation that is unlikely to change over the next quarter century. As to China and Pakistan specifically, despite the positive upturn in bilateral relations with both, India should be prepared to confront security challenges from both these traditional rivals. It is to be hoped that the predominantly democratic coalition government of the People's Party of Pakistan and Pakistan Muslim League (Nawaz Sharif) to get formed in Pakistan after the February 2008 elections would sustain the India-Pakistan peace process that has endured over four years. Yet, taking into account trends and pointers for less than best case scenarios, the China-Pakistan nexus could assume a collusive form, along specific strategic

Being widely perceived as a prospective stabilising influence in Asia, India's strategy of friendship with all and alignment with none is unquestionably sound.

trajectories, and the Indian armed forces may have to bear the brunt of such a joint threat. In the light of the transformation in the nature of inter-state war during the early decades of the 21st century, only a strong aerospace power could help ease such an unbearable pressure, short of abandoning the no first use nuclear policy. We have seen how China's nuclear-missile assistance to Pakistan transformed India's strategic and security dynamic forever, and imposed severe constraints on conventional force employment. This would compel a careful analysis of future force design, especially for the land forces.

MILITARY CAPACITY BUILDING

During the next quarter century and beyond, China would constitute a potent challenge to India that could assume a military dimension, and, hence, the requirement for a countervailing capacity building. Nagging uncertainty persists on what course future Chinese leaders would set for their country, with its vastly expanded comprehensive national power, and how its rapidly modernising military power might be employed. Analysis of China's military acquisitions—notably in aerospace power and maritime forces—its strategic thinking (local wars under informationalisation), ability to field “disruptive military technologies... and generation of capabilities for conflicts over resources or territory”² has crucial significance for the nature of countervailing military capabilities India requires to build. It is significant that the bulk of China's military investments are in offensive trans-border strategic priority areas, including high-technology multi-role Su-30 class of combat aircraft, nuclear submarines, special forces, strategic airlift and cyber warfare. Sharp build-up of space capabilities and a wide range of ballistic missiles are its big ticket priorities. The recently announced defence budgets of India and China for 2008-09 at \$26 billion and \$57 billion are revealing: India's decade-long average annual budgetary increase at 10 per cent is nearly half of China's at 18 per cent.

Translated into percentage of GDP, India's defence budget has reached a 46-year low of below 2 per cent, while China, given the opacity of its actual defence

2. Department of Defence, USA, Annual Report to the Congress Military Power of the People's Republic of China, 2007, p.1.

budget, is widely believed to be spending far more than the officially-claimed 1.5 per cent. The Pentagon has assessed China's 2008-09 defence budget being between \$97 billion and \$139 billion, as against the officially announced \$57 billion. Such a huge allocation, and effective and expeditious translatability into tangible assets, makes China's military capability build-up formidable.

As to Pakistan, given the track record of the four-year-long bilateral peace process, the prospects of attenuation in the threat from that country to India cannot be ruled out, but wild cards cannot be factored out either. Pakistan's Indus river/Margalla Pass north-south near-fatal fault line straddling a medievalism-obsessed de facto 'Talibanistan' to the West, and a relatively moderate, progressive and accommodative Islamic dispensation to the east, has major security implications for India, notably with regard to Jammu and Kashmir. The end point could well be a scenario of increased (catastrophic) *jihadi* strikes in India. Given the experience of Operation Parakaram (2002), what would the political leadership's response be in such situations? It needs to be also highlighted that while all the indices of cross-border terrorism have shown a distinct downward trend over the last five years, starting 2002, there is no evidence to indicate that the terrorist infrastructure in Pakistan or Pakistan Occupied Kashmir has been wound down. The 'tap' can be opened whenever the establishment in Pakistan decides to do so.

There is a need to underscore that socio-economic growth and development; political stability and national cohesiveness; technological absorption and capacity building; and safeguarding national interest and managing conflicts would be the primary drivers for India's national grand strategy over the next quarter century. Such wide-ranging imperatives would necessitate an enabling environment of peace, stability and tranquillity—internal and external—for which conventional and nuclear deterrence against inimical external powers would be a prerequisite. Our 12th Plan (2007-12) objective of 9 per cent GDP growth, to be stepped up to 10 per cent during the early years of the 13th Plan (2012-17) and thereafter, would require capital and, crucially, energy accessed externally. The economic impact of rising powers is impelling a change in international relations and security policy due to the energy dynamic. China's foreign and security policies are increasingly

China's foreign and security policies are increasingly driven by energy-driven investments. Even India would have to meet 90 per cent of its oil demand through imports.

driven by energy-related investments, particularly in Central Asia and Africa. As the International Energy Agency's World Energy Outlook of November 7, 2007 reveals³, by 2030 India would have to meet 90 per cent of its oil demands through imports. China may have to do likewise, thus, creating competition between them for secure energy supplies from sources in West Asia, Central Asia, the Caspian, Myanmar and possibly Africa and the South China Sea.

Peace operations, invariably under the UN umbrella, based essentially on multinational forces, in which India's forces have traditionally played a stellar role, and would continue to do so in the years ahead, is yet another dimension of international security with immense traction. In numerical terms, these are on the upswing—having increased from 48,000 troops deployed in November 2001 to 83,854 troops in February, 2008⁴. On the other hand the possibility of India employing a regional peace-keeping force as part of a 'coalition of the willing' with a general mandate of the international community rather than formally under the UN cannot be ruled out. This is because the UN's inability to intervene effectively in conflict-spots in recent years stands proven—a development that has encouraged the trend of conducting unilateral or coalition operations. Hopefully, the lessons of the ill-conceived, unprofessionally-planned and hurriedly-inducted peace-keeping force in Sri Lanka (1987)—without full institutional consultation with the three chiefs of staff of the armed forces—would not be lost on policy-makers planning for such contingencies in the future.

On the aspect of energy security and related imperatives, India's military capability planners and security policy-makers would require to delineate 'areas of vital interest' and 'areas of influence'. The former entail military capability to safeguard national security objectives, in expanding circles of vital interest, commensurate with military capabilities progressively built (Horn of Africa and

3. <http://www.climateactionprogramme.org>, p.3. Accessed on March 10, 2008.

4. <http://www.un.org/Depts/dpko/bnote.htm>. Department of Public Information, United Nations, February 2008. Accessed on March 8, 2008.

Straits of Hormuz to Malacca Straits and beyond, and Central Asia to the northern Indian Ocean), while the latter would remain the focus of innovative and robust diplomatic initiatives. Equity investments in 20 oilfields across 16 countries, from Vietnam to Venezuela and Sakhalin to Sudan, and their security, thus, come purely under the diplomatic genre. But a possible contingency where a small protection force may have to provide security to our assets against the threat of local non-state inimical groups could well arise. And India's capacity build-up would need to cater for such contingencies.

FORCE EMPLOYMENT

Evidently, an assessment of joint capabilities required by the Indian armed forces would be based on the foregoing evaluation of the strategic/regional environment, and on the five-point template of India's national security objectives for defence policy announced by the prime minister in the Lok Sabha in April 1994 and included in the Sixth Report of the Standing Committee on Defence presented to the Parliament on March 8, 1996. These comprise: one, defending national territory over land, sea and air (read from the threat posed by China and Pakistan); two, securing the internal environment against threats to unity; three, exercising (stabilising) influence over the immediate neighbourhood; four, contributing towards regional and international stability; and, five, possessing out-of-country contingency capability to prevent destabilisation of small nations in the neighbourhood.⁵ Subsequently, Pokhran II imposed the need for a joint capability 'triad' to sub-serve India's nuclear strategy. In a widened conflict spectrum—from sub-conventional conflict through limited borders war to conventional inter-state war all under the overhang of nuclear deterrence—force employment acquires immense complexities. Besides, peace-time protection of borders and the needs of internal security remain work in progress. What kind of joint military capabilities would future conflicts demand? Would these vary substantially from those today, and under upgradation, in any transformational sense? And what kind of force structures would require to be evaluated and defined? These are questions that warrant answers.

5. For detailed text, see Kapil Kak, "Direction of India's Higher Defence," *Strategic Analysis*, July 1998, p. 503.

For India, a war prevention oriented national strategy, restraint as a strategic tool, attempts at cooperative peace as against competitive security, and conventional and nuclear deterrence run in tandem. As nuclearisation has altered the conflict paradigm dramatically and imposed new challenges in escalation dynamics between limited conventional war and nuclear deterrence, the value of nuclear deterrence would, thus, be stronger when military capability is sustained at a sufficiently high level over the next quarter century and more. But if a conventional war/limited border conflict, possibly in the mountains, is thrust on us, the same would need to be concluded under the nuclear dynamic—whether from China or Pakistan—at least cost, in the requisite timescales, to attain a victory that politico-strategic objectives would so demand.

REQUIREMENT OF JOINT CAPABILITIES

Joint Vision: The Intangible

To evolve a deliverable joint long-term vision for development of joint military capabilities, in the required common spaces, over the next quarter century and beyond, the key imperative is joint thinking as also a joint approach to developing tri-Service synergies, wherever these are required. For this, it would be necessary to create best conditions and practices for cooperation between the three Services because the biggest impediment in achieving jointmanship is lack of trust, confidence and sensitivities. A consideration that is often disregarded is that the purpose of transforming military capacity is not only to effect change but anchor it productively in our own realities.

Without a participatory, transparent and genuine tri-Service ethos and environment, joint operations the world over tend to creak at the 'joints'! And India is no exception. Yet, jointmanship is a key battle-winning factor in any future war and conflict. It has been rightly said that the biggest impediment in inter-organisational synergisation is the human mind and inability to understand the other person's point of view. It is for this reason that cognition has been perceived as an important training tool for a military leader to acquire far higher levels of maturity.

In the Indian context, partnership has to be based on completely equal footing

regardless of single-Service aspirations, manpower, size, budgets and geographical spread. Jointmanship tends to lose potency when a relatively smaller-size, technology-intensive, operationally-decisive but seemingly non-dominant Service is sought to be 'controlled' and not provided full play to achieve strategic effect. The belief that imposition of an Indian variant of the US Goldwater Nichols Act (1986) would serve as a silver bullet for the problems seemingly bedevilling jointmanship in India is clearly hyperbole. Likewise, for the much-bruited integration: what is the type of integration necessary, and in which specific context of force application—a bi-Service army-air land-air battle or navy-air maritime strike scenario or tri-Service amphibious operations? It has been said that there has not been an amphibious landing since World War II! Would it be a vertical or horizontal integration, and why? Should it not be more prudent to have information and decision integration?

An effective joint doctrine, a long-term joint military net assessment, interoperable command, control, communications, computers, intelligence, information (C4I2) frameworks, and joint intelligence and logistics support systems are indeed the need of the hour for the specific joint operations envisaged. But all these would merely follow adoption of a truly joint thinking, joint approach and, most crucially, joint planning at the strategic, operational and tactical levels of military operations, conducted primarily within the sub-continent. Looking back, it is significant that two crucial committees of the chiefs of staff (even today the highest military body to provide tri-Service military advice to the Cabinet), the Joint Intelligence Committee (JIC) and the Joint Planning Committee (JPC) performed this task admirably even as the chiefs were required to be always in attendance at meetings of the Defence Committee of the Cabinet (DCC). The DCC was abolished in 1963, in the wake of the India-China War 1962, to be replaced initially by the Emergency Committee of the Cabinet and subsequently the Cabinet Committee of Political Affairs, so as to anchor defence decision-making in a politico-strategic context at the highest level. But ironically, today, the defence-political interface continues to be the weakest link in the chain. It is true that, chiefs of staff, either wholly or selectively, are invariably invited to attend meetings of the Cabinet Committee on Security to

proffer advice on specific military issues under discussion. But what has not gathered adequate traction is the crucial need for reform at the political dimension of defence decision-making through integration of the three Services Headquarters with the Ministry of Defence. Reform merely on the military side, envisaged under the chiefs of defence staff concept, would be tantamount to putting the cart before the horse.

While the Integrated Defence Staff of the Chiefs of Staff Committee could continue with the task of long-term force development planning that requires government resource allocation, there is an urgent necessity to have in place a re-structured and revitalised JPC, with a permanent staff, for effective force employment planning, notably for joint operations. As to out-of-country contingencies, disappointingly, the joint doctrine of India's defence forces is reported to have made only a superficial mention of such imperatives and "stayed clear of articulating any definitive intervention philosophy and overseas stability operations."⁶ Given that every single element of national power must work in tandem for such contingencies, jointness must, perforce, go beyond the military. Diplomacy, sciences and technology, defence procurement agencies and other organisations must all be involved with such operations.

JOINT CRISIS RESPONSE: THE TANGIBLE DETERMINANTS

Locale and Contingencies

As indicated earlier, India's military responses to a regional crisis affecting its vital national interests could be unilateral or as part of a multinational coalition. Precise crisis-locales being unpredictable, various contingencies could be scripted-scenarios ranging from the 'smug' to the 'doomsday'! Afghanistan, Nepal, Sri Lanka, Bangladesh, Maldives, Mauritius, Seychelles could, however, feature in the calculus as would a possible compulsion to protect the 4.2 million Indians currently resident in West Asia. Evacuation of these nationals with concurrent humanitarian operations could be a possibility. It would be useful to recall that during the Gulf War (1991), 1,13,000 of the 3,00,000 Indian citizens

6. See Arjun Subrahmanyam, "Out of Country Contingencies: Peacekeeping, Enforcement and Stability Operations." Paper presented at the 4th Subroto Mukerjee Seminar on Indian Air Force in the Decades Ahead held in New Delhi, on November 17-18, 2007, p. 1.

resident in the region at that time were flown back home on aircraft of the Indian Air Force, Indian Airlines and Air India in what remains till today the second largest airlift in world history after Berlin. In meeting regional crises, warning time available, risk-levels, determination and leadership of adversary forces, 'decisive force', casualty-acceptability and weather would influence the ability to achieve military objectives. Lower order contingencies and developments that could threaten India's interests could also include local civil wars, insurgencies, border conflicts and dangers to Indian commercial interests.. Aerospace dominance platforms with related maritime dominance (where applicable), fused intelligence assessments and precision weapons, would be essential prerequisites for response.

Role Balance

Military capabilities for crisis response evidently serve to generate options for the political leadership to employ force to safeguard vital national interests. But given the compulsions of credibility and affordability, there is need to factor into the planning calculus what capabilities would meet the imperatives of a conventional (limited) war, the need to respond to crises and those that form part of shaping the strategic neighbourhood. The criticality of our national interests in relation to the character and quantum of out-of-country force deployed would, however, be the key determinant. We could create a peace-keeping force having tri-Service assets by way of firepower, mobility, sustainability and self-sufficiency for a deployment timeline extending to about a month.

Lower order contingencies that could threaten India's interests could also include local civil wars, insurgencies, border conflicts and dangers to Indian commercial interests.

Forward Presence

In the near term, given India's existential power, influence and military potential, this appears problematic. But over the long horizon, this aspect, including forward based airfields in friendly countries, could provide such

nations reassurance and lend credibility to friendships, help deter threats, impart invaluable knowledge of regional conditions and assist in crisis response. Rotational and periodic developments, joint exercises, military to military contacts, reassuring the Indian diaspora, and jointly combating international terrorism and narcotics-trafficking are likely to remain central to our regionally oriented crisis response policy. The broad nature of such contingencies, and the regions and countries of India's vital interests where India's military capability may need to be applied would have to be included as part of a joint military net assessment having both classified and unclassified segments, with the latter being made available to think-tanks in the public domain. Needless to emphasise, situations, force applications and their play-out require war-gaming to impart realism.

Command and Control

A suitable command and control structure for a major out-of-country military presence would need to be in place commensurate with the nature and character of the task required to be undertaken. This could take the form of an ad hoc joint command structure on the lines adopted for Sri Lanka (1987-89) that is believed to have worked well. Also, the out-of-country contingency forces commander could be placed either directly under the chairman, Chiefs of Staff Committee or alternatively, as some have suggested, under one of the existing regional single Service commands. The former option, however, would be more appropriate. These are issues that could well be resolved at the Chiefs of Staff Committee level. The key issue here is that political, diplomatic, military energies would need to be synergised at the highest politico-military levels. For all other in-country territorial defence joint operations, the existing command structures with inter-command coordinatory operational linkages, suitably finessed, may not need to be disturbed.

Disaster Relief

Following the passage of the National Disaster Management Act (2005) and establishment of the National Disaster Management Authority, the capability of

crisis response, both nationally and regionally, requires to be synergised still more for disaster prevention and mitigation. Requirement of capacity building in early warning, communications, mobilisation of land, maritime and air resources, including air-based reconnaissance and relief, and rapid and comprehensive response would merit optimisation in the years ahead. The highly acclaimed tsunami relief operations (2004) could serve as the basis for multinational response planning and execution operations.

INTERNAL SECURITY

Internal turbulence is a manifestation of socio-economic inequity, poor governance and rule of law enforcement, and people's perceived socio-political grievances of an aspiration-delivery mismatch, increasingly but often inadvertently fuelled by the power of the media. This security challenge is expected to prevail for decades. The answer lies in the political domain, with military capabilities brought to bear only when the insurgency is supported and tangibly inflamed by inimical neighbours.

Although land force-centric in character, counter-insurgency/militancy operations have often involved employment of air power reconnaissance, surveillance and transportation assets and, of late, unmanned aerial vehicles (UAVs). Traditional political reservations on employment of manned airborne combat platforms preclude their use. But, in the future, this could alter, as micro-precision weaponised UAV/manned airborne platforms have the potential to be effectively employed in this role, especially in urban warfare scenarios, when the targets are unambiguously confirmed as foreign terrorists.

RESOURCE DEVELOPMENT

Requirements of joint military capacities encompass an array of specific resources that call for development in the timeline of 2008-33. These are briefly flagged below:

- **Funding and R&D.** Funding is the prime driver for capacity-building and would, thus, need to not only sustain the ongoing single Service modernisation but also fulfill other upgradation plans. Defence expenditure

as a proportion of GDP would certainly require to be stepped up to about 3 per cent from 2.27 per cent (2005-06). This would also make available resources for defence research and development (R&D), energise the defence industry, notably the high technology aerospace sector, and obviate any unacceptable strategic or conventional asymmetry in relation to China.

- **Forces' Needs.** As stated earlier, in a nuclearised environment, there would be major constraints on employment of land forces. Focussed shallow thrusts across a wide frontage, backed by heavy firepower, to capture slices of enemy territory as a bargaining leverage could perhaps be the only workable options. Force structure emphasis requires to shift from the plains to the mountains with the focus being on trans-Himalayan capabilities. Raising of additional specialised offensive mountain divisions with the capacity of dispersed operations, supported by air mobility assets and having sufficient fire support provided by ultra-light howitzers would greatly widen the choice of offensive options. On the other hand, special forces would have a key role in exploiting the adversary's vulnerabilities. All three Services would have to build effects based capabilities. The ability of aerospace power to deter, both by denial as also punishment, employ force in coercive and compellence roles, strike at strategic, operational and tactical levels of conflict simultaneously, pursue air dominance, and achieve strategic effect makes it a politically acceptable force employment option in a nuclearised environment. Besides, its other unique characteristics of trans-oceanic strategic penetration and reach, precision force application and persistence, all at the speed of sound would require to be effectively leveraged. More critically, until a full-fledged 'triad' is in place in about two decades, dual capable manned combat aircraft would be the only retaliatory option in a nuclear deterrence breakdown. The numerical downslide in combat platforms, from a quarter-century norm of 39.5 squadrons to about 30 today, must not only be rapidly arrested but also built further to a 55 combat squadron air force over the next quarter century. This is because of the truism that force multipliers cannot serve as a substitute for 'force. Besides, security-externalities would increasingly shift India's focus in terms of applying its aerospace power towards trans-national issues that today constitute priority

challenges—international terrorism, assistance to friendly countries or disaster management. Thus, projection of defence capability, geared to joint hard-soft power options that advance India’s national interests, could become a normative compulsion. Naval forces would require credible oceanic presence to counter adversary efforts to carve out spheres of influence. These must also protect own sea lanes of communications (SLOCs). Amphibious capabilities may, by 2033, require beefing up to division strength.

- **Space Systems.** Military space activities that India would need to build up over the next quarter century are: space support (access, satellite control, space launch and on-orbit support); force enhancement (C4I2, navigation and targeting, meteorology and tactical warning and attack assessment); space control (anti-satellite—ASAT— and space tracking); and force application (ballistic missile defences). The statement of Air Chief Marshal F.H. Major, India’s chief of the air staff on the sidelines of the Singapore Air Show 2008 that the IAF was conceptualising and developing plans for a satellite-based eyes in the sky project designed to improve India’s strategic reach and capabilities needs to be seen in this light. India would, moreover, require a capability for rapid launch of satellites to replace those destroyed or disabled during conflict. Short of space -weaponisation, ASAT capabilities in-being for both ‘hard kill’ and ‘soft kill’ would be necessary. We would need to take a cue from China which has exhibited great clarity with regard to the goals and future of its space programmes.
- **Technologies and Personnel.** Technological expertise and industrial capacities comprise the bedrock of a strong nation. So, the infrastructure that would support India’s ability to develop joint military capabilities over the next quarter century would include technological strength, high technology industrial base and skilled personnel, whose technical abilities require many years of training and expertise. In fact, the private industry, services sector and the academic world would compete for the same pool of scientific and technological expertise. High end technologies would also have to be planned for and developed indigenously.⁷

7. P.S. Suryanarayana, “India and a new US Game in East Asia,” *The Hindu*, March 6, 2008, p.11.

- **Special Interest Capabilities.** A synergised multi-sensor high band-width information technology (IT) network is a crucial need for satellite and manned aircraft surveillance and reconnaissance. Besides, there exists an imperative to obtain timely warning of changes in the capabilities of potential adversaries. Robust, interoperable, mobile and flexible C4I2 systems are also needed for strategic forces, network-centric operations as also in joint force employment scenarios. Besides advanced electronic warfare (EW) systems, directed energy and micro-waves weapons, and nano technologies are areas that would find increasing military application in the decades ahead and need to be developed.
- **Mobility.** Rapid response has always been a critical need and its requirements would only grow. Special forces could be considered for interventions more suited to their unique capabilities. Future mobility requirements would have to be based on a synergised armed forces' mobility strategy. Inter-relational factors, including warning times, potential challenges, risks involved and lift force needs, for both territorial defence and crisis response contingencies, would need to be factored into such a mobility plan. Additional sealift requirements and surge capacities and improvements in strategic airlift, which have cried for attention over many years, and medium transport to support induction, sustenance and de-induction of a peace/stability force, would need to be planned on priority. Rotary wing platforms for air transportation and resupply in future conflicts, notably in the mountains, would also require consideration.

MILITARY MANPOWER: MANAGING QUALITY AND COSTS

VERGHESE KOITHARA

The manner in which India's military manpower structure has evolved over the past 30 years has created serious problems with regard to both *quality* and *costs*. Our forces have become, on the average, six years older than they were 30 years ago and the military pension bill, as a percentage of the pay bill, has quadrupled in the same period. Some recognition of these danger signals is visible today among those responsible for keeping the forces modernised and in fighting trim as well as those responsible for managing the country's finances. But there is, as yet, no serious impetus for change. The comfort stemming from our superiority over Pakistan, the decline of defence expenditure as a percentage of gross domestic product (GDP) as a result of our faster-growing economy, the military's traditional conservatism and a disinclination to study how other countries manage their military personnel have all contributed to this.

This paper argues that the Indian military's all-regular structure is primarily responsible for its accelerated 'greying' as well as its out-of-control pension bill, and that these problems cannot be meaningfully addressed without bringing in a substantial short service component. Many of the steps taken in the past to improve military service conditions have done unintended harm to both manpower quality and manpower costs. If we persist along past lines, our forces

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will grow still older and our pension burden still higher. Both combat fitness and the defence budget will continue to suffer. We need a new approach. The approach suggested in this paper centres on restructuring our forces with a 35 per cent component of regulars, all serving to the age of 60, and a 65 per cent component of short servicemen serving five to eight years.

This paper is divided into the following sections:¹

- The Trodden Path.
- The Present Structure and Quality.
- The Needs of the Future.
- Training, Experience and Expertise.
- A Second Career.
- The Concerns.
- The Present Structure and Costs.
- Towards a Better Structure.
- Transition Issues.
- An Action Approach.

THE TRODDEN PATH

Our past efforts at improving the conditions of military service have revolved largely around:

- Improving compensation.
- Raising retirement ages.
- Enhancing promotion prospects.

The military's pay needs are examined by pay commissions that are basically geared to examine civil service issues. Pay commissions work by equating military ranks to civil service grades. This makes it difficult to take into adequate account some factors crucial to the military such as early retirement, more stressful working conditions and limited upward mobility. As a result, the military feels that it is not being compensated fairly. The government, on the other hand, is worried about major financial repercussions because of the huge

1. In revising this paper the author has benefited from the views expressed at the Defence Manpower Seminar held at the Centre for Airpower Studies, New Delhi June 24-25, 2006 and some statistics provided by the Centre for Air Power Studies.

numbers involved.

The efforts to lengthen engagement periods and raise retirement ages have no doubt conferred some material benefits, but have had an adverse effect in the combat fitness area. Our forces today are not only about six years older than the forces that fought the 1971 War, but they are also between five and eight years older than the forces of major powers. In the army, which accounts for over 80 per cent of the military manpower, the initial service engagement for combat stream soldiers was raised from 7 to 10 years in 1965, to 15 years in 1976 and 17 years in 1979.

Our forces today are not only about six years older than the forces that fought the 1971 War, but they are also between five and eight years older than the forces of major powers.

In the British days and in the first two decades after independence, India was able to persist with an initial (and mostly non-extended) engagement period of seven years. In those days, when the soldiery came from a semi-literate peasant society, it was possible for a released soldier in the age group of 25-28 to go back and resume his briefly interrupted village life. The secondary level education and the small gratuity that the army gave were enough to give him a head start in his village. But societal conditions changed and it became increasingly difficult to return to the land.

The lengthening of initial engagement of combat soldiers from 7 to 10 years in 1965 was a palliative measure taken on account of this growing difficulty. This raised the release age group to 28-31, but still did not provide for a pension. It was the extension of the initial engagement to 15 years in 1976 that gave a small pension to everyone. But this also raised the release age to 33-36. Neither the opportunity to serve in the army till one's mid-thirties nor the benefit of a small pension thereafter did much to improve the material condition of the soldier. Under growing pressure, the initial engagement period was further extended to 17 years in 1979, but this was hardly more than an anodyne.

It must be recalled that from the mid-1960s, the army was facing a serious dilemma with regard to personnel below officer rank (PBOR). There was the

need to keep the forces young but also the very pressing need to do something to alleviate the conditions of men facing impoverishment at the end of their engagement. Many senior army officers who were closely involved in these decisions at that time now feel that the decisions to extend engagements in this manner, based on humanitarian considerations, did great long-term damage to the fighting fitness of the army².

Thirty years have passed since pension became assured to PBOR. But this has not helped much. Released soldiers still need to seek a second career — but now in their late thirties or early forties when their family responsibilities are at their peak. Officers leave about a decade later, but they too have to look for a second career. On the average, PBOR today have a working life about 18 years shorter than their civil service counterparts, and officers about eight years shorter. Raising retirement ages has thus led to a situation where it has neither been possible to improve the material conditions of servicemen to civilian levels nor maintain the earlier youthfulness of the forces.

Much the same has happened with the efforts to better promotion prospects through the creation of more higher-rank vacancies. In the decade after independence, the departure of the British kept the promotion belt moving reasonably fast. And during the decade following 1962, the large expansion of forces kept the belt moving. But by the mid-1970s, the promotion situation had turned grim for both officers and PBOR. During this period, dissatisfaction in the forces rose not only because of their worsening condition in objective terms, but also because the balance in career prospects between the military and the civil services (including the police) was being changed to the disadvantage of the former.

Unlike the civil services, it is not easy for the armed forces to improve promotion prospects by proliferating senior jobs. The forces have a rank-job correlation emanating from the organisational logic of fighting formations which is apparent from the largely common pattern seen the world over. Our attempts at injecting additional senior vacancies (such as making full colonels command battalions) have not proved successful. On the one hand, career opportunities in the forces are still well below those in the civil services, and, on the other, the

2. Lt. Gen. M.L. Chibber PVSM, AVSM and Lt. Gen K. Balaram PVSM are two distinguished such officers.

proliferation of higher ranks has led to some devaluation of rank and possibly some weakening of the command system. It has also led to personnel getting less satisfaction from promotions than they used to earlier.

The civil services, without a command-dictated organisational structure to constrain them could go for large scale upgradations which they increasingly did after the concept of cadre reviews was introduced to take care of their promotion prospects. The military sought to get on this bandwagon in 1979 but after a couple of cadre reviews they found that ranks were getting depreciated in an undesirable manner. There was also the problem, particularly in the case of PBOR, that a substantial portion of 'workers' had now become 'supervisors', creating a role imbalance within units. Memories of what had happened then have faded and once again there is a push for upgradations.

At the time of the first cadre review, some had felt that a better approach than proliferating senior ranks was to give people higher pay without conferring the rank that went with it. There was organisational logic in this thinking, but it did not cater adequately to the needs of the individual. While they were happy to get more pay through measures such as extended pay-bands, few in the forces were willing to accept that higher pay was a reasonable substitute for higher rank. The latter gave a military man a lot more than money. It gave him responsibility, authority, perquisites, privileges, standing within the forces and prestige outside. A higher pay grade by itself gave none of these.

In an effort to improve promotion prospects. the armed forces do use short service engagements, but this has been confined to officers. There are no short service engagements for PBOR who constitute nearly 96 per cent of military manpower. In the case of officers too, short service induction is carried out in a very limited manner, largely confined to non-combatant categories. Moreover, there have always been strong pressures to give permanent commission to those who come through the short service channel, and this is often done negating the purpose of short service entry. This problem is currently being highlighted in the context of women officers³.

3. This paper has used male terminology throughout. This has been done to facilitate easy reading, and not because of any underplaying of women's role in the forces.

THE PRESENT STRUCTURE AND QUALITY

What is special about the armed forces with regard to the quality of manpower is the crucial need for physical fitness. And physical fitness is, above all, a function of age. Armed forces the world over, therefore, try to keep themselves young and they do this mainly by encouraging early retirement and through short service engagement. Early retirement is not a problem in societies where job opportunities are good. In many developed countries, early release is also facilitated by other means. In the case of officers, opportunities for post-graduate academic education are liberally offered while on active duty and this makes the transition to a second career easy. In the case of PBOR, highly subsidised higher education is facilitated on release in addition to opportunities for distance learning while in service.

Some variation of national service was once the norm in both the North Atlantic Treaty Organisation (NATO) and Warsaw Pact countries. It fell into disfavour when educational levels and job opportunities rose in those countries and military service became unpopular. Yet, national service is still very much there in small militarily-efficient countries like Israel, Singapore and Switzerland. It continues in major countries like Russia, Turkey and Germany. Moreover, in countries like the US and the UK where draft and national service have been given up, the average length of initial engagement is generally between three and six years.

In the Indian armed forces, the average officer now retires in his early fifties and the average PBOR in his early forties. This, as noted earlier, has resulted in the military's average age going up by about six years over the last three decades. We now have junior commissioned officers (JCOs) in their mid-forties commanding platoons, and colonels in their early forties commanding battalions. In most combat efficient armies, like those of the US and the UK, the platoon commanders are in their early or mid-twenties and battalion commanders in their mid-thirties. Similar differences in the age structure are visible in the case of the navy and the air force as well. These differences in age profiles are far from insignificant, although in our anxiety to improve service conditions, we have tended to gloss them over.

Besides training, the two key factors that determine quality in the forces are

the intrinsic attributes of a person at the time of entry and the level of motivation experienced while he is in service. These two factors, in turn, are influenced by job satisfaction, career progression, pay and benefits, job stress, and the prospects for a second career. Job satisfaction is a key issue, and in our forces it has come to have a broadly inverse relationship with age. One rarely sees an officer or jawan in his twenties who is dissatisfied with his job. They all visibly enjoy their work, and in the case of officers, the responsibilities they are called upon to shoulder.

It is only when they get into their thirties that problems begin. At this stage, those in their age cohort in the civil services and in the private sector begin to move into more responsible jobs. Concurrently, promotions also slow down in the military. A major in his mid-thirties finds that those in his age group in the civil services have generally climbed a level higher. What is more, while he faces a 40 per cent possibility of being left behind at the next promotion, his civil service counterpart is assured of sailing through. He also knows that the relative situation will get still worse as he grows older.

Sharply diminishing billets as one climbs the military hierarchy make it inevitable that many competent men get stuck at the lower reaches of the pyramid, leading to job frustration and disenchantment. What is worse, uncertainty of promotion caused by high elimination rates gives rise to play safe attitudes and undesirable careerism. Because rank is so important, the failure to make a promotion becomes a traumatic experience and results in de-motivating and de-energising nine out of ten excellent men at some point in their career. The large number of representations put up on account of non-selection for promotion, and the smaller yet sizeable number of cases that end up in courts are proof of the malaise in this area.

Then there is the matter of job stress. Military life is necessarily tough. There are hazards to life and limb, physical and mental stress, unstructured and

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extended working hours, abridgement of citizen rights, disciplinary restrictions, heightened transfer turbulence and the like. It is easier for young men unencumbered with family commitments to cope with these than it is for older, family men. Field service and frequent transfers, which one had cheerfully taken in one's stride as a bachelor, become more stressful when one is married and has children. As one progresses through one's thirties and forties, the situation gets worse. Good education for one's children now

becomes a major concern. So does, increasingly, the wife's need for a career of her own. Stable life in urban locations, which the military finds difficult to provide, has now become a seriously felt need, unlike the case some years ago.

Finally, there is the issue of a second career, which is a special need of the military. Despite the raising of retirement ages, most people in the forces have to look for another career. In the civil services, everyone can serve till 60, and in the private sector even longer. Moreover, because of his longer service, the civil servant generally gets a higher pension despite some extra weight given to the military. So, in spite of their pensions, most people in the military have to work 10 to 20 years after leaving the forces. But forties and fifties are not good age groups to embark on a second career. Also, the skills that over three-quarters of military men acquire have only limited transferability to the civilian world. While the need for a second career is built into the armed forces, the opportunity to succeed in it is denied to the majority.

As one can see, these factors – job satisfaction, career progression, pay and benefits, job stress and second career prospects – all have a direct and consequential relationship with the age factor. All five do not bother a military man while he is in his twenties, but they all do when he gets older. *There is thus a great deal of advantage to be gained if the years in the military are shortened.* It will translate into greater attraction for a military career and, therefore, better quality

at the point of entry, as well as greater contentment and, therefore, greater motivation while in service.

The ageing of our forces has also had more direct consequences. Physical fitness is an obvious crucial requirement in the military. And it is well established that physical fitness begins to decline gradually in the late twenties and more rapidly in the mid-thirties. Today, about 70 per cent of the military is above the age of 27, and about 30 per cent above the age of 37. Growing old also has a negative impact on certain desirable *mental attitudes* in the forces such as offensive spirit and the willingness to take risks.

The changes in rules during the last 30 years permitting nearly everyone to earn a pension, and the raising of retirement ages, have made our forces the *oldest* among those of major military powers. The difficulties created by the rising age structure are not limited to the domain of physical fitness. There are related problems in areas like training and family pressures. We are increasingly becoming a military of *middle-aged family men* distracted by matters like wives' jobs, children's education and such—a careworn force in which much effort is expended on internal administration and welfare.

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THE NEEDS OF THE FUTURE

Whether we continue or not with the current approach to manning, the demands placed on our forces, particularly PBOR, are set to change in a big way. Having reached the threshold of great power status, India has to mould its forces with a longer term vision. We have to look beyond Pakistan and internal security, and develop forces with greater employment flexibility and greater reach. Such a shift will call for the accelerated infusion of not only advanced hardware and concepts, but also of people with the ability to handle

them. Popular literature on RMA (revolution in military affairs) focusses on hardware and systems, but the deeper story is about the *reconfiguring and retraining of people to make the concepts and hardware of RMA exploitable*. This is a factor that must be seriously borne in mind when we look at the future pattern of our military manpower

India's future forces will need people with *much greater capacity to absorb technology*. This is particularly so in the case of our army which constitutes the vast bulk of our military manpower⁴. In the case of officers, matters are manageable because everyone has a bachelor's degree and they have all come through a demanding selection process. But in the case of PBOR, who are educated only up to the 10th class and mostly in indifferent schools, there are problems. *The infantry soldier, who is now considered semi-skilled, will have to be a highly skilled person in tomorrow's military.*

One of the notable changes occurring in the armed forces worldwide is the narrowing of differentials in the academic backgrounds of officers and PBOR, and between different trades among PBOR. The aspirations of PBOR are also changing. This change, already very visible in our navy and air force, will inevitably grip the army too. At least 80 per cent of PBOR of the future forces will have to be *highly skilled*. For this, they would need to be appropriately qualified academically, which means at least 12th class, given the standards prevailing in most of our schools.

During the last 20 years, the only two major militaries in the world whose personnel strengths have grown, instead of shrinking, are India's and Pakistan's⁵. The personnel strengths of American, British and other European forces have all come down—by an average of 35 per cent. In Russia, the numbers are down by 60 per cent compared to the 1990 Soviet figures. China's numbers are down by about 30 per cent⁶. These reductions are attributable not only to diminutions of threat but also to deliberate efforts to reduce numbers by

4. Of the 14.52 lakh servicemen currently in the Indian armed forces, 12.62 lakh (86.9 per cent) are in the army, 0.54 lakh (3.7 per cent) in the navy and 1.34 lakh (9.4 per cent) in the air force.

5. India's strength today is 14.5 lakh and Pakistan's 7.1 lakh. Reserve and paramilitary forces have been excluded.

6. The current strength of US forces is 14.3 lakh, down from 21.3 lakh in 1989. The current strength of British forces is 1.9 lakh and of French forces 2.1 lakh. The Russian strength is 10.3 lakh and the Chinese strength 22.5 lakh. In all cases, reserves and paramilitary forces have been excluded.

increasing *per capita* combat power.

An effective method long used in advanced countries to achieve manpower reduction is to combine the functions of operator and maintainer through multi-skilling. We too have tried to do this but have been unsuccessful *largely because our inadequately qualified operators have found themselves unable to take on maintenance work*. This again shows how important it is to raise the educational standards of our operators, or combatants.

In the advanced countries, changes are constantly being effected in the areas of unit structures, trade structures, training, and organisation to increase the punch delivered per head. Modular forces that can interface in many different ways to suit different requirements are being created. In parallel, there is the trend towards forces operating in a more interdependent fashion to synergise capabilities. Then there is the concept of net-centric (rather than platform-centric) operations where hierarchies are de-emphasised. *With decision-making devolving to lower levels, each future combatant has to be much more empowered than his counterpart today, not only in terms of his own primary role but also in terms of peripheral understanding and interface management. The quality demanded of each military person – officer and PBOR – is inexorably rising. We need to take this on board seriously.*

Historically, manpower economisation has not been a priority in the Indian military, just as it has not been on the civil side.

Historically, manpower economisation has not been a priority in the Indian military, just as it has not been on the civil side. A major reason is the fact that the per head hardware costs in the army have been fairly low. It has been different in the navy and the air force, but even in their case, the manning levels of ships and air squadrons have always been, and continue to be, significantly higher than in advanced countries. As our hardware quality and operating patterns catch up with those of advanced militaries, there will have to be both a reduction in numbers and an increase in skill levels.

When examining the kind of manpower structure we need in the future, it is worth noting that *future forces will have to cope with continually changing skill structures*.

We must also recognise that young minds have a learning advantage over older minds that is no less than what young bodies have over older bodies in the area of physical skills.

Not only will skills have to be constantly upgraded within a particular trade, but the trades themselves will have to evolve and mutate. Fixed trade structures that one has been accustomed to will have to give way to more flexible ones. In these circumstances, if people are taken in for long durations, they will find themselves needing to acquire quite different skills as the years pass. This will call for frequent re-training, much of it outside the original skill area. If, on the other hand, people are taken in for shorter periods, then their initial training can be structured to meet the job needs of the period ahead.

We must also recognise that young minds have a learning advantage over older minds that is no less than what young bodies have over older bodies in the area of physical skills. In upgrading technology skills in the military, there are clear gains to be had if the people involved are young. Moreover, the academic background of students in India is continually improving. An entrant to the forces in 2007 will be more technically current than one who had entered in 2002. Regular turnover enables the forces to take advantage of this reality.

Turnover of personnel is also important for another reason. We cannot know today with great clarity what ought to be the size and shape of our forces a decade from now. The forecasting of overall numbers itself is difficult, but estimating the numbers needed in various skill categories is virtually impossible a decade in advance. Those numbers will depend on the equipment that comes in and the tactical concepts that get developed. If one has inflexible numbers generated by long tenures, one will encounter far greater manning difficulties than would be the case if one can select appropriate newcomers. But for this to be possible, one needs short tenures. *Circulation of personnel creates the flexibility needed in manpower restructuring.*

TRAINING, EXPERIENCE AND EXPERTISE

The *expertise* that armed forces need is acquired through both training and on-job

experience. In general, the role of training in the creation of expertise, relative to on-job experience, has increased over the years. This has come about mainly because of the acceleration in the induction of new technologies which, in turn, alters job requirements rapidly. In a modern military force, an adequate level of technical academic background is necessary to permit effective absorption of training. Two aspects are particularly important with regard to the training of future forces:

- The relationship of training to subsequent employment.
- The relationship of training to current job needs.

In a military like ours where the norm is a 20 to 30-year career, it becomes necessary to provide broad-based training to everyone, particularly officers. This is because those serving for long periods will be called upon to fill several different types of job. This inevitably results in a *low correlation between training inputs and subsequent employment*. This would not be the case if the employment period is shorter, say five to eight years. In that situation, it will be possible to employ a person within a narrow field of skill throughout and so structure his training inputs in a targeted manner to meet the needs of that field. Function-specific training imparted in this manner can speed up competence creation significantly.

The relationship between training and current job needs is also important. Job needs in the military change continuously because of the march of technology.

The relationship between training and *current* job needs is also important. Job needs in the military change continuously because of the march of technology. The pace of change is greater today than it was a decade ago and it will be greater still a decade from now. Because of this, the matter of *knowledge obsolescence* has acquired an importance that was not there in more sedate times. The training inputs that a 25-year career PBOR gets, mostly in the early years of his career, *lose their relevance progressively* as years pass. It is different in the case of five- or eight-year career men. Training does not get outdated within such short periods.

Training and on-job experience do not of course constitute separate paths to

Methods of military training in advanced countries have changed enormously in the last two decades.

expertise creation. Training has always to be supplemented by on-job experience. But the idea of an earlier era that once a soldier is given some broad initial training he will be able to cope with changes in equipment and concepts largely by himself is no longer true. Both new entrants as well those who have been in the forces for many years need to be trained (or re-trained) when equipment changes. A relevant question is which of the two will need more training. It could be argued that a person with experience in an earlier generation of equipment will be able to cope easier. It could also be argued that a younger person with a more updated technical-academic background will cope better. Much will depend on the extent of technology change.

Methods of military training in advanced countries have changed enormously in the last two decades. Simulation, once reserved for expensive training such as of pilots, is now used to train virtually everyone. Moreover, simulation is no longer limited to individual training. Full mission simulators where teams and whole units can be trained are increasingly in use. Modelling and simulation have now advanced to the stage where entire battles can be simulated—not at the gaming level of the past, but in a manner where each individual can experience his specific environment. Full mission simulators are now available not only for force-on-force conventional warfare but even for anti-insurgent and anti-terrorist warfare.

What is more, simulation is no longer limited to training institutions. With sufficient computers, assured connectivity and adequate bandwidth, networked tactical training and mission rehearsal capability are now available to combat units and formations even when they are operationally deployed. Exploiting the ability to merge real and virtual worlds, it is now possible to push integrated yet distributed training directly into operational units. All this may seem unreal and far-fetched when large parts of our army are still engaged in raw, elemental anti-terrorist and counter-insurgency warfare. Yet, these are the kind of training technologies *that not only need to be incorporated but also lie within relatively easy grasp*

of a software power like India.

There can be little doubt that young people with good academic backgrounds will be able to cope with such hi-tech training methods better than older, less educated men. This is a point that ought to be carefully weighed while considering the usefulness of less experienced but better educated men vis-à-vis more experienced but less educated men. Today's training tools are able to compress dramatically the periods needed to gain experience through the creation of 'artificial' experience. Such artificial experience is increasingly provided in advanced militaries through appropriate mixes of live, virtual and constructive training. As a consequence, *expertise creation is now leaning more on training inputs than on experiential learning.*

India's existing military training infrastructure was largely created in times when the educational standards outside were very low, and substantial, highly structured in-house training was unavoidable. Long equipment change cycles of those days also made it possible to ensure that trainer skills and instructional equipment stayed current for long periods. But in the emerging context, where combat equipment and their methods of tactical exploitation are set to change rapidly, this approach to training is becoming less and less viable. There is a need today, well recognised in advanced countries, to shift away from standardised, instructor-controlled training to the self-paced, individual-centric type. These changes again confer an advantage on the younger, more currently-educated learner.

A SECOND CAREER

Despite lengthened engagements and raised retirement ages, over 95 per cent of PBOR and over 85 per cent of officers find it necessary to seek post-retirement work. Being able to stay in the forces till one's forties or early fifties has made military men better off financially at the time of retirement than was the case earlier. But this has had adverse fallout too for them in that it is more difficult to find new jobs in the age groups they are leaving now. In today's job market, *the younger the job seeker, the better his job prospects.* Because of this, most servicemen, except those possessing marketable skills in fields like information technology

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(IT), merchant marine and civil aviation, are hesitant to take the plunge.

The forces are keen to get the 15 or 20 years of service which minimum pension calls for. This is partly because of the premium placed on experience and partly because of the high investment in training. *While a service of 15 to 20 years is arguably in the interests of the organisation, it is not in the interests of the individual.* For the latter, the advantageous length of service is either the civil service pattern of serving till the age of 60 or a short stint that enables him to

leave in his mid or late twenties – an age young enough to embark on a good civilian career. This conflict of interest between the organisation and the individual in the matter of when to leave the service must be recognised.

Three broad approaches are generally talked about when it comes to tackling the problem of second career. The first is the in-house solution, where people from combatant billets are proposed to be moved to non-combatant billets in their late thirties or early forties. There are at least four difficulties with this approach. One, if there is to be, say, an 18-year career in a combatant stream followed by another 18 years in a non-combatant stream, then one would need equal numbers of billets in both streams. But this is not the case as the combatant streams are larger. Two, jobs in the forces cannot all be separated on the basis of the need for physical fitness. Because of the spatially integrated manner in which forces function, most billets termed as non-combatant ones also require high levels of physical fitness. Three, if people are re-streamed into non-combatant categories later in life, it is inevitable that non-combatants will have a higher rank-structure than combatants, particularly in the case of PBOR. Finally, ex-combatants are unlikely to possess the skills needed in many non-combatant roles, particularly where technical knowledge is needed.

The second approach, often proposed by the Services, is to transfer military men laterally into civil services after 15 to 20 years of service. Transfer of PBOR

to police and paramilitary forces is particularly favoured. But this fails to take into account the fact that these forces too require fairly high levels of physical fitness and they cannot be manned primarily by middle-aged men. While transfer to other civil services does not pose the problem of physical fitness to the same level, there is the difficulty of lack of appropriate training and experience on the part of incoming servicemen.

The third approach, currently the one least favoured in the Services, is to give some starting “capital” – in the form of education and money – to those departing so that they can find their own way in the civil world. The absence of marketable skills is a formidable problem here. Service in the forces equips only a small percentage, particularly in the case of PBOR, with the skills valued in the civilian world. It is necessary, therefore, that those leaving the forces are enabled to acquire such skills.

The market value of PBOR will significantly improve if they join the forces with a 12th class education (as proposed) instead of the 10th class education they have today. With a 12th class qualification they will be in a good position to compete if they are given enough money and some preference in admissions to pursue a degree or some other advanced course. In the case of officers who even now have a degree, the same kind of support for post-graduate education should be given. The forces should also negotiate with the authorities to give “work credits” to departing servicemen—as is given in most foreign universities—so that the length of post-release education can be reduced.

Both PBOR and officers could also be given some preferential treatment in recruitment to civil services and other public sector jobs, both at the Centre and in the states. If our forces go in for serious outsourcing of services as is done in advanced countries, the departing short servicemen will also be in high demand in companies providing such services. But neither of these two avenues should

The forces should also negotiate with the authorities to give “work credits” to departing servicemen—as is given in most foreign universities—so that the length of post-release education can be reduced.

be regarded as the primary path to the launch of a second career. That path should be created by ensuring that departing servicemen possess good education as well as the skills gained in a hi-tech military. If this is done, it will put them in an excellent position to compete in the open job market. They will have the further advantages of being young enough to acquire additional skills, not being burdened with family responsibilities and not having too high expectations from the first civilian job.

THE CONCERNS

The viability of a manpower structure where a large proportion of officers and PBOR, say two-thirds of the total, leave the forces after a short stint of five to eight years has not been seriously examined in our country so far. Nevertheless, the fact that this approach is very different from the one followed in our country since World War II generates *prima facie* concerns. A major cause of worry is the possibility of expertise getting diluted. But this worry is largely overblown. As we saw earlier, *most advanced countries are able to generate the needed expertise in their forces with relatively small percentages of long termers.*

There is also the concern that those serving short stints will not be able to develop the kind of commitment and *esprit de corps* that is a notable feature of our forces today. Some worry that the psychological underpinnings of the forces might get damaged. Those who see the military as a different way of life unsurprisingly see advantage in catching newcomers young and keeping them in for long periods. The army, with its strong regimental system, tends to worry more on this score than the other two Services. But the reality is that *most advanced-country armed forces have large components of non-career men and they manage the commitment problem quite effectively.* If we study the military manpower structures of other countries in depth, we are likely to find reassurance on this score.

In our army, great importance is attached to the regimental system. Not only is regimental spirit regarded as a battle-winning attribute, but the generation of that spirit is considered to require long years of service within the regiment and within a specific battalion. Great store is placed on the coaching and mentoring that goes on in units. But it is worth noting in this regard the changes that have

occurred in the British Army from which we had copied the regimental system. During the downsizing that has gone on in that army, many regiments – 200 or more years old – have disappeared through mergers and disbanding. Similarly, many famous training institutions of British forces – some over 100 years old – have either disappeared or have had their functions recast. Yet, the British military continues to be one of the finest in the world. Clearly, there are ways in which *élan* and *esprit de corps* can be retained while modifying organisations to suit the needs of changing times.

In this connection, we have to reckon with the fact that the Indian Army has a long history and long-established traditions. The JCO system, the ‘class’ based regiments and much more are part of this. It is worth recalling that the army went in for 10th class combatant-stream recruits several years after police and paramilitary forces had, and that the shift was made primarily in the interests of securing a higher pay classification. The army’s preference for lower educated recruits at that time stemmed from the belief that men from the villages made better soldiers than those from urban areas⁷. This is cited only to point out the strong conservative streak that exists and which makes many people uneasy of changes.

There are concerns of a different order too – such as whether we are capable of managing an organisational change of this scale. Some think that while the suggested structure will be an improvement over the present one, it may not be practically feasible for us to get there. They fear turmoil in the units till the new pattern gets established. Others doubt our ability to provide *targeted training for specific jobs which is a key element of the proposed structure*. These and many others are valid concerns, but change management of the scale suggested has been carried out in the forces of many countries many times. Even in India, the huge expansion of the army during 1963-67, when its strength went up from 3 lakh to 8.5 lakh, had called for a change management challenge no less serious than the one being discussed.

Finally, many – in all the three Services – are concerned with the fact that the

7. It was seriously felt that the “natural field craft” possessed by the villager was more valuable than the education that a townsman could bring. Also, that a less-educated recruit was more amenable to discipline.

The argument goes, even if the revised structure would lead to a younger and more current military a decade or two from now, it does not address the problems of today.

suggested approach does not offer anything to those already in the forces. The majority of those already in are too old, and in the case of PBOR, not educated enough, to make an easy transfer to civilian life in the manner the new recruits will be able to. Therefore, the argument goes, even if the revised structure would lead to a younger and more current military a decade or two from now, it does not address the problems of today. It is this concern about the need to take care of those

already in the forces that leads many to prefer other approaches such as upgradations and raised retirement ages. There is no doubt that this is a very relevant concern that needs to be seriously addressed.

THE PRESENT STRUCTURE AND COSTS

This paper has so far been examining the issues concerning the quality of our forces. This section looks at the other key factor in the management of military manpower – the matter of costs. It is worth noting at this point that during the past 20 years, the rate of growth of manpower expenditure on serving and retired personnel has (when peaks and troughs are smoothed) stayed consistently higher than the rate of growth of the defence budget.

The cost of personnel in any organisation is determined by two factors:

- Numbers.
- Per capita costs.

Till now, our efforts at lowering manpower costs have concentrated on reducing numbers. The chief means of reducing numbers are the substitution of manpower with technology, organisational innovations and outsourcing. We have tried all three, but with discouraging results so far. The reasons for this are many, *but the fundamental one is that to reduce numbers it is necessary to increase per capita effectiveness*, and we have not been able to do this in a notable manner. There are other problems too. For example, low intensity warfare is a commitment that our

army has had to constantly meet, despite the efforts to make it a wholly paramilitary force responsibility. And low intensity warfare, despite the best technological inputs, remains a manpower intensive business.

The other method of reducing personnel costs is to lower per capita spending. Today, when we are being confronted with an exploding pension bill, *the most effective way to achieve this is to reduce the numbers that have to be paid pension*. Rising pension burden is now a major worldwide concern, with every passing year making the situation grimmer. The problem is particularly acute in the case of the armed forces because of their *more adverse ratio of working years to post-retirement years*.

The costs of military manpower are largely determined by:

- Active service costs.
- Training costs.
- Post-release costs.

Is it possible to reduce active service costs without reducing the numbers? It can be reduced if per capita costs are brought down. And this in turn can be achieved if the average number of years served are brought down because compensation is linked to years of service. If one also takes into account factors like married accommodation and other expenses towards dependents, the average

yearly outgo in respect of a thirty-year career man will work out to about 50 per cent more than that for a five-year career man. If our military is restructured with a mix of 35 per cent regulars and 65 per cent short servicemen, *the overall costs of active duty personnel will come down by about 25 per cent*.

As for training costs, if 65 per cent of men serve only five years, the numbers to be trained at the entry stage will obviously go up, in fact, by about five times. But the increase in costs on this account will be balanced by the much shorter initial training periods of five-year servicemen. There will also be no mid-career training for them. The overall training costs under the proposed scheme will, therefore, not

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be more than what they are today.

The biggest saving will come in post-release costs. Thirty years ago, in 1976, only 35 per cent of PBOR were drawing pension. Today, nearly 100 per cent are. The pension bill, which was 18 per cent of the P&A bill then, is 73 per cent of it today⁸. The P&A bill of servicemen today is Rs. 18,217 crore and the pension bill is Rs. 13,224 crore. It is estimated that the military pension

bill will exceed the military P&A bill around 2015. The increase in pensioners on account of rule changes is now tapering off, but the steadily increasing lifespans will continue to push numbers up. It is worth noting that the pension bill of today's 19 lakh military pensioners amounts to nearly half of the total pension bill of the central government.

Under the proposed scheme, only 35 per cent of servicemen will draw pension, and that too only after they have all reached the age of 60. Even after allowing for generous gratuities for the others, the total post-release benefits bill (which includes medical cover for pensioners and their families) comes to only about 45 per cent of what it is today. In other words, there will be a saving of 55 per cent. Together, *the 25 per cent saving in active duty costs and the 55 per cent saving in post-release costs will lead to a 35 per cent reduction in overall personnel costs.*

From the costs point of view, another major advantage of the proposed structure is that the yearly turnover of personnel will more than triple – from about 60,000 to about two lakhs. This will enable the forces to trim their numbers much more easily than at present if circumstances permit such a course. With that level of turnover, P&A and other personnel-related expenses will become much less a *committed* outgo than they are today. This will provide valuable *flexibility* in managing defence expenditure.

TOWARDS A BETTER STRUCTURE

The basic conclusion the foregoing analysis leads one to is that *reducing the average*

8. During this period, the number of military pensioners has risen from 9 to 19 lakh.

length of service is the key to improving quality and reducing costs in the armed forces. But this is not something that can be achieved through minor changes. It calls for a major restructuring of our military manpower. The proposal made in this paper is to restructure our forces with a 35 per cent component of regulars, all serving to the age of 60, and a 65 per cent component of short servicemen serving mostly for five years, and in some cases for eight years. The regulars will broadly follow the same pattern of service as it exists today, with the following changes:

- Personnel will serve in combat units only till the age of 50. Thereafter, till the retirement age of 60, they will serve in training, staff and administrative billets.
- With the base of the pyramid shrinking by 65 per cent, promotion opportunities for the regulars – both officers and PBOR – will become three times what they are today and that too without any debasement of rank.
- The 35 per cent of jobs that the regulars fill will all be high challenge ones.
- Gaining much greater satisfaction from work and also freed from resettlement worries, the performance level of the average regular will rise markedly.

The 65 per cent short service component will be structured as under:

- Officers will be taken in after graduation in the age group of 21-23. PBOR will be taken in after the 12th class in the age group of 18-20.
- Eighty-five per cent of officers and 90 per cent of PBOR will serve five years, including training periods of 6 to 12 months. Fifteen per cent of officers such as pilots, and 10 per cent of PBOR such as technicians will serve eight years, including training periods of 15 to 24 months.
- Throughout their service, all five-year short servicemen shall serve in one job or two closely related ones. Eight-year men shall serve in two or three closely related jobs. Initial training will be tailored to meet the needs of the specific billet or billets that each short serviceman is earmarked to fill.
- This approach, complemented by double-banking for a couple of months at the time of changeover, can lead to a high level of competence creation.
- The number of short servicemen released each year will be about 9,000 officers and 150,000 others. Eighty-five per cent of officers will be released

in the age group of 26-28 and 15 per cent in the age group of 29-31. Ninety per cent of PBOR will leave when they are 23-25 years old and 10 per cent when they are 26-28.

Those leaving will be given substantial gratuities to help pursue higher education or private sector careers. Some preference should also be given to those who apply for government and public sector jobs because of the benefit the civilian sector will gain through the infusion of toughened, disciplined, nationally-integrated men from the armed forces.

From the perspective of the armed forces, the 35 per cent of regulars will provide managerial direction and system-level understanding of issues, while the 65 per cent of short servicemen, trained narrowly but with the latest skills, will bring up-to-date knowledge in fighting and technical areas.

From the perspective of the armed forces, the 35 per cent of regulars will provide managerial direction and system-level understanding of issues, while the 65 per cent of short servicemen, trained narrowly but with the latest skills, will bring up-to-date knowledge in fighting and technical areas. In a manner of speaking, the regulars will provide a stable structural framework on which a constantly upgraded canvas of short servicemen will be spread.

Two questions deserve some preliminary answers at this stage: one, why is the split between regulars and short servicemen set at 35:65; and two, why are the suggested short service periods five and eight years? As far as the 35:65 split is concerned, the following are the basic considerations that have gone into it:

- A broad estimate of the number of jobs requiring multi-faceted military experience (like command and key staff jobs) as well as jobs requiring system expertise such as higher level maintenance and training billets has led to a percentage figure of 35.
- The percentage of men serving over six years in many advanced militaries is seen to be in the range of 25 to 40.

- Regulars, both officers and PBOR, will be able to get a rewarding career in the forces if their numbers are limited to about a third of the total.

As for the suggestion that 85 per cent of officers and 90 per cent of PBOR serve five years, and 15 per cent of officers and 10 per cent of PBOR serve eight years, the following are the factors considered:

- Cost-effective training is the biggest consideration. Examples of many countries show that 85 per cent of short service officers and 90 per cent of short service PBOR need to be trained only for six to twelve months, or an average of nine months. Five years of service should achieve adequate return on a training investment of nine months.
- The jobs requiring longer periods of training – 18 to 24 months – have been estimated at about 15 per cent of short service officers and 10 per cent of short service PBOR. In their case, an eight-year service period should give an adequate return on training investment.
- The interests of individual short servicemen must also be a strong consideration. *If their interests are not taken care of, the forces will not be attractive to them.* Short servicemen would want to leave young enough so that they can pursue a second career – in most cases, after two or three years of post-release education.
- PBOR will need to leave at a younger age than officers as they will not have degrees when they leave.
- Those who serve for eight instead of five years will not be disadvantaged because their longer training (18-24 months against 6-12 months) will give them a better start in the job market.
- Keeping the years of service low also helps in keeping the percentages of married men low.

To sum up, the approach suggested in this paper is geared to achieve the following principal benefits:

- Reduction of the average age of combat forces by about eight years, with its positive impact on *physical fitness, mental attitudes and learning ability.*
- More up-to-date training.
- Better educated PBOR who are critically needed for technologically

advanced forces.

- Reduction of married personnel by about 60 per cent.
- Greater motivation and contentment.
- Reduction in overall military personnel costs by about 35 per cent.

There will be lesser benefits too, such as:

- A reserve force of under-40 men that would be twice the size of the active force
- Infusion of some trained, disciplined men into the civil sector

TRANSITION ISSUES

It is obvious that one cannot move from a structure of near total careermen to one of two-thirds short servicemen in a hurry. If nothing is done to speed up the transition, the full changeover will take about 25 years for officers, and about 18 years for others. But these transition periods can easily be halved through golden handshake schemes which, as it felicitously happens to be the case here, will largely pay for themselves. This is because those coming in will need to be paid much less than those going out.

Since the transition, even if accelerated through golden handshake schemes, will take at least 10 years to achieve effective (about 80 per cent) completion, there will be no abrupt changes to the way the forces function at present. Changes will be gradual, *giving plenty of time to plan and execute change management* with the help of studies and feedback. While it is possible, and undoubtedly advantageous, to incorporate organisational and other changes to achieve greater efficiency as the short servicemen come in, there will be no compulsion to implement such changes. In fact, if it is so decided, organisational structures and manning plans can remain exactly as they are today.

Short servicemen will initially come into the Services at a rough rate of 60,000 a year, which number represents about 5 per cent of the total manpower. These newcomers can be distributed among a large number of units in which case their impact will be little in each unit. Alternatively, they can all be channelled in large numbers to a few units. If the latter approach is adopted, only about 7 percent of units will be undergoing transition at any time. Even if

the departure of existing personnel is speeded up through golden handshake schemes, no more than 15 per cent of total units will be in a state of flux. This is a manageable level of 'disruption'.

A major project that will have to be carefully planned and implemented is the creation of new training systems for short servicemen. Given the training management expertise available in the forces, this should not pose serious difficulties. The training capacity already available in our institutions is adequate for the new structure because the increase in the number of trainees will be offset by reduced training durations.

The biggest transition challenge will lie in ensuring that the departure of the existing personnel (through normal retirement and golden handshake schemes) is carried out in a manner that takes care of the interests of both the organisation and the departing personnel. This is an area where some heavy human resource development (HRD) consultancy is needed. But one thing is clear - *it will be unwise to be niggardly with the golden handshake schemes*. The benefits that will accrue from restructuring shall be so substantial that generosity will reap great returns.

AN ACTION APPROACH

Structural changes of the order suggested in this paper need to be examined from a variety of angles, including military, financial, technology exploitation, HRD, change management and futurology. A useful first step would be to establish *whether the present manpower structure is capable of meeting the future needs of India's armed forces and whether the personnel costs being incurred today are acceptable*. Only if the answer to at least one of the two questions is in the negative will there be a need to look for alternatives to the present structure.

If it is decided to seek an alternative model, then it is desirable that the search is conducted in a scientific and comprehensive manner. While 'informed opinion' is no doubt essential to carry out this work, it will not be advisable to rely primarily on it. It is impossible, even for the very well informed, to visualise how changes of this nature and magnitude will impact on the various facets of the military's functioning – in the short, medium and long term. *Some high quality*

modelling tools supported with sophisticated software will be essential. Such tools will enable a wide range of options to be looked at and assessed – objectively, quickly and with quantitative accuracy.

The needed tools can be easily developed by contracting out the work. For these tools to be used effectively, it will be necessary to also have a good deal of data in several areas. Much of this data is unlikely to be readily available, and it is likely to take a long time to generate them through bottom-up collection. For the purpose of the task being discussed, however, the needed database can be created fairly easily through *a well-designed sampling plan*. This work too can be largely contracted out.

Finally, a multi-disciplinary expert group will be necessary to carry out the study. Their initial work will include the guiding of model development and database creation. Later, when the necessary database is created and modelling capability acquired, the group can move to the substantive work of analysis, evaluation and alternative building.

DEFENCE FINANCE

A.V. VAIDYA

Defence finance, in very simple words, has been defined as application of economic principles to defence related issues. Defence finance has always been a subject of great debate between the finance and defence people – defence people wanting more and more, while the finance people wanting to give less and less out of the scarce monetary resources available – a debate between butter and guns, as some call it. To put it very simply, this is so because defence personnel tend to think of defence as detached from the overall economic health and development of the nation, and finance people think of defence expenditure without relating it to operational requirements, threats and national security. Hence, this tug of war.

Being a democracy, with civilian rule having the upper hand, unlike in military ruled or autocratic states, in all probability defence is likely to get a raw deal. Politicians and also the public at large often look at defence as a wasteful expenditure, giving preference and precedence to diplomacy as a major weapon for dispute management. But the hard fact is that every nation has to spend a certain amount of precious money on creating a credible defence and the debatable question that arises is: HOW MUCH?

One cannot say that one will spend only when the war starts and hope to produce, either indigenously or through import, one's requirements to fight that short intense war. All that will be available to fight that war will be the ammunition stock and stock of other spares available at that point in time. In

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other words, one cannot hope to develop instantaneous security. One has to develop it over the years. It is akin to preparing for a mathematics paper. One cannot hope to pass by not studying regularly and leaving everything for the last moment.

National security is a sub-set of comprehensive national power. Broadly, national power can be said to consist of economic power, conventional power and nuclear deterrent power. These are the three main constituents of national power. The other lesser determinants are landmass, natural resources and population. A nation-state which has all the three main constituents in the proper proportion can be considered a global power. The USA, Russia, European Union and China today fall into this category. India aspires to reach this status in a couple of decades.

Today, India lacks adequate economic power though she appears to be progressing well in this direction to enhance it. She is short on conventional power but with the backing of the improved state of overall finance and, consequently, adequate defence budgeting, she can expect an appreciable increase in this aspect in the future. India is notably deficient in nuclear deterrent power but our nuclear weapons and missile programmes seem to be following the right path to achieve our aspirations. The foreign exchange reserves are slowly building up and as our economy develops, realisation is dawning that India needs to spend adequately to build the other two components of power, namely, conventional and nuclear deterrence.

In the old days, defence issues were wrapped in the garb of secrecy and, hence, proposals never went to the Planning Commission like in the case of food and agriculture, railways, etc. Even today, the defence budget continues to be handled exclusively by the secretary defence, finance and defence section. The extent of credibility of our defence posture has so far been governed by the Ministry of Finance (MoF) by exercising strict control over the defence budget. Generally, the barest minimum, and perhaps much less than the affordable, budget has been sanctioned for defence by viewing defence expenditure as something which is incurred at the cost of development. The thought process has been defence or development, but now, with the kind of economic growth that India expects to have

in the future, many feel that with better management, we should be talking of defence and development instead of defence or development.

Normally, when we talk of national security, we generally refer to it as border security that is provided by the armed forces. Is this concept of security valid today or has it changed? Some feel that today economic security and energy security rather than border security matter more. And they say that this security depends on how strong the nation's economy is. They argue that the chances of a conventional war where one nation attacks another to gain territory to build subsequent bargaining power have greatly receded. Today, the world is being controlled by market forces. So it is money rather than guns that determines the national security. They argue that it is perhaps time for a paradigm shift in our concept of security. They feel that we need to shift to the cooperative security concept. Alliances, treaties, assurances and conventions can be means of ensuring low cost security. If we develop strategic partnerships in terms of trade with China, the US, Russia, etc the chances of war will reduce and so will our requirement to spend on defence. But those who oppose this thought process feel that no matter how strong a nation becomes monetarily, it will always need to spend to develop a matching conventional and nuclear deterrent to cater for unforeseen contingencies, and they say that history is replete with examples where a militarily weak nation has been dominated by a stronger one.

The questions that, therefore, arise are: "Is spending on defence a total waste of precious resources? Is defence spending a cost-effective way of negotiating threats?" Well, some feel that it is cost-effective. They say that the costs involved in conducting a war are so huge that it is perhaps more cost-effective to spend on credible defence to avoid a war – a debatable thought but one that nevertheless, has some merit. Wars devastate the economy of a country and put it back by around 10 to 15 years, so it is perhaps cost-effective to spend enough on defence on a regular basis and create a kind of credible deterrence which will help avoid wars. This argument operates on the philosophy that if war has to be deterred, then it should be made to appear like an exorbitantly and unaffordably costly affair to the adversary.

Yet another argument put forth by some in favour of spending on defence is

that credible defence stimulates economic growth. They believe that good defence capability, with safe internal security, will invite foreign investment, tourism, etc and, thus, help in improving the economy of the nation. Defence expenditure on infrastructure like airfields and roads can promote a country's economy. They also have an apprehension that cutting down on defence expenditure may not necessarily lead it into production of the national economy. Quite sadly, it may mostly get frittered away elsewhere.

When it comes to deciding how much one should spend on defence, as a first step, the government must decide about what kind of security is required against the various kinds of threats that are existing today and the kind of threats that are likely to arise in the future, and then plan towards creating the right kind of deterrence. In other words, the national objectives need to be laid down. The kind of war that a country is expected to fight, the kind of contingencies that are likely to arise in the future should be clearly defined and only then can the required capabilities be developed.

The capabilities required must also be selected after careful and indepth thought, with due consideration for the costs involved. For example, in my opinion, there is no point in spending a huge amount of money on creating an elaborately networked but horrendously expensive anti-ballistic missile air defence set-up when this threat can be negated by a much cheaper offensive defensive posture by manufacturing a reasonable number of ballistic missiles (BMs) and convincingly deterring the enemy with the threat that if he drops one missile, ten will be dropped on him to wipe him out from the map.

Similarly, buying more and more expensive aircraft or ships or main battle tanks just because the adversary is doing so may not be entirely wise. One must study and work out the most cost-effective defence against the threat and then spend intelligently towards achieving the required deterrence. An arms race is something that must be avoided because that can result in over-spending and, finally, in total collapse of the country's economic system. A classic example is the fall and disintegration of the erstwhile USSR as a result of over-spending in the nuclear arms race with the US. North Korea is yet another example which is spending too much on defence, leaving almost nothing for development. Such a

situation may finally end up in defending without having anything to defend.

Also, one has to be wise in spending the allotted defence budget. How much you are spending on defence is less relevant than how well you are spending. Proper thought has to be given to deciding the ratio of expenditure between capital and revenue. Let me give you

a very simple example of household expenditure as a corollary to defence expenditure. A poor man does not need a lock because he has nothing to protect. But as he earns more money, akin to the gross domestic product (GDP) going up, he starts spending a major chunk of his savings on acquiring capital goods. He buys a fridge, TV, washing machine, etc and then realises that he not only has to spend on a good lock for security but also the cost of maintenance of the equipment has gone up. Soon ,it becomes so high, as he acquires more and more capital goods, that he finally has to spend all his savings on revenue, and has no money left to acquire new things. This sort of situation needs to be avoided. As someone has said, the ideal ratio between revenue to capital should generally fluctuate around 55 : 45. The details of the revenue to capital ratios from the Eighth Plan onwards have been listed below (Table 1). It can be seen that there has been a gradual improvement with the passage of time.

It is very important to spend the scarce defence money wisely and try and get maximum bang in the allotted budget.

Plan	Revenue	Capital
Eighth Plan	70.0%	30.0%
Ninth Plan	73.6%	26.4%
Tenth Plan	63.0%	37.0%
Eleventh Plan	52.0%	48.0%

As mentioned earlier, it is very important to spend the scarce defence money wisely and try and get the maximum bang in the allotted budget. "Maximum value for money" should be the guiding principle. Another equally important principle should be to try and effect saving in one's spending. We need to pay attention to even small issues because even small

savings in many areas can result in substantial savings overall. We must not get tied down by bureaucratic procedures. If our present procedures are not cost-effective, we must amend them. I quite like the example given by someone about the cake of soap supplied to jawans in various places. He mentioned that the cake of soap is still procured centrally in Delhi and sent to far away places where it effectively costs five times more, with the intrinsic costs of transportation, etc included, compared to the cost of the same cake of soap available locally in many places, even hard areas. This kind of thoughtless spending resulting in wasteful expenditure needs to be avoided. We need to carry out proper auditing of our expenditure and cut down on wasteful expenditure wherever possible. Earlier, defence expenditure in general and also expenditure involved in research and development (R&D) was treated like a holy cow. When its economic viability was questioned, no answers were given, under the excuse of secrecy. This kind of situation needs to be avoided. We must try and be a little more open in our approach.

Three factories of the Department of Defence Production are producing garments at a huge cost. It is said that their products are not cost-effective. Such enterprises can be privatised. Outsourcing can, thus, be a very effective way of ensuring savings in defence spending. The main reason behind outsourcing, as one would normally understand, is to have something done in a more cost-effective way – more cost-effective in terms of money or in terms of time or both. But it is not necessary that outsourcing should always result in savings, of money or time. It may have to be resorted to if one lacks the expertise in one's organisation to do what one wants done. Outsourcing could also be done in search of better quality or to off-load some of the work to free the manpower to be used for more important jobs or for downsizing the organisation, thus, effecting a saving in revenue expenditure.

Classically, the defence forces have been structured to be independent by themselves. The various combat units are required to be self-contained and self-equipped in all respects so that they are in a position to move lock, stock and barrel even with very little warning, and be able to function efficiently at the new location in the shortest possible time. Hence, outsourcing at combat unit level at times does

not seem to be practical. However, there are many other areas where outsourcing is possible.

The biggest area in which major outsourcing that can be done by the defence forces relates to the support services of administrative nature and maintenance activities. This involves transfer of certain activities which were traditionally undertaken in-house by the armed forces. Outsourcing of some of these activities, which could be done more economically by the specialised agencies

in the private sector without jeopardising their operational capabilities and compromising their security, would result in saving of money and manpower which can then be used more effectively to concentrate on their core activities. The defence Services ought to carry out an indepth study to identify areas in their respective Service which could be outsourced. Some of the areas could be as follows:

- Common User Mechanical Transport.
- Messing.
- Security.
- Logistics.
- Clothing.
- Fire-fighting Services.
- Software Algorithms.
- Base Repair Depots.
- Ordnance Factories.
- Use of COTS.
- Turnkey Projects.
- Aircraft Maintenance.
- Training.

As regards selection and acquisition of equipment, we need to be careful and ensure that we effect savings in the long run. In other words, we need to think

The biggest area in which major outsourcing that can be done by the defence forces relates to the support services of administrative nature and maintenance activities.

strategically, holistically and comprehensively about all aspects related to the selection of the equipment. For instance, we bought the Mirage-2000 at quite a huge cost but soon thereafter, we opted for procuring the MiG-29s because per piece they were so much cheaper, only to realise at a much later date that their life cycle cost was much higher. We, therefore, need to ensure that our economics is worked out correctly before any contract is signed. Overall ownership cost including long-term maintenance cost, spares consumption, running cost, infrastructure related expenditure, overheads, transfer of technology issues, etc, need to be meticulously worked out before the contract is signed.

Related to the concept of life cycle costing, mention needs to be made about the L-1 concept which is in vogue today for vendor selection and which, in fact, defeats the spirit behind intelligent buying. Today's acquisition process, after issue of the request for proposal (RFP) and on receipt of technical and commercial proposals, involves opening of the technical proposals first and constitution of the Technical Evaluation Committee (TEC). The TEC carries out the technical evaluation and

The equipment which has been quoted with the least cost may have a bigger life cycle cost and other hidden costs which come to light at a later date.

shortlists the vendors whose equipment meets the qualitative requirements stated in the RFP. Thereafter, the commercial proposals of the vendors who do not qualify are returned to them unopened. The commercial proposals of only those vendors who qualify are then opened and scrutinised, and the vendor who has quoted the least is awarded the contract. This is called the L-1 process of vendor selection.

The flaw in this process is that the equipment which has been quoted with the least cost may have a bigger life cycle cost and other hidden costs which come to light at a later date. The other flaw in this process is that the L-2 or even the L-3 vendor might have quoted slightly higher but his equipment might be technically superior to that of the L-1 vendor. Thus, even if a little costlier, it would make sense opting for that costlier vendor in such a case – however, the procurement policy does not permit this. To overcome this flaw, the adoption of the L1T1 concept has been suggested. This implies that a matrix be made with the help of which the

equipment could be given numerical grading on the various attributes and characteristics of the equipment under consideration, including cost, and the equipment which scores the highest, considering both cost and technology, be recommended for procurement. But this policy was not acceptable since it was felt that such a procedure could give scope for manipulation.

Purchase of the Mirage-2000 was financially a good buy considering the aircraft's performance, which was very good and the life cycle cost which was comparatively better, but it was not an intelligent deal because we did not get access to the Digibus and, hence, remained at the mercy of the French for any modifications or alterations to the aircraft weapon systems. Finally, we had to give a fair amount of money to the Israelis for carrying out upgrades to the aircraft. This aspect must not be overlooked and must be made a part of the essential qualitative requirements.

There are some people who feel that globalisation, meaning economic integration and regional economic groupings, has reduced the possibility of war. On the contrary, there are some who feel that globalisation provides for a new form of hegemonic domination by the developed over the developing.

Well, I would like to think that certain changes have certainly come about in the global environment that necessitate corresponding changes in our thought process. Tomorrow's war will not be fought on the international border. It will either be of asymmetric nature, fought within the borders in the form of internal disturbances or by executing decisive massive surgical strikes deep inside, on the country's nerve centres, also referred to as centres of gravity. But regardless of what form it takes, one thing that is certain is that we will need to create credible defence and deterrence to safeguard our interests and this can only be achieved by spending appropriately on creating the required capabilities.

It is often argued that what is the point in giving more money when the defence forces cannot spend even what is presently allotted to them, and at the end of the financial year, surrender a fair amount of money? This argument, though not baseless, is not entirely correct. The bureaucratic procedures of procurement are so complex and lengthy that mostly it takes well over two years for the procurement of even simple equipment. Probity and transparency perhaps are instrumental for

The bureaucratic procedures of procurement are so complex and lengthy that mostly it takes well over two years for the procurement of even simple equipment.

this delay. This is one price we have to pay for being a vibrant democracy. However, one commendable step that the Ministry of Defence (MoD) has taken is to replace the old beleaguered system of file movement with the Defence Procurement Procedure 2006 (DPP-06). The objective of this procedure is to ensure expeditious procurement of the approved requirements of the armed forces in terms of capabilities sought and time-frame prescribed by optimally utilising the allocated budgetary

resources. It lays down comprehensive policy guidelines for all concerned. No files are now required to be circulated. Instead, all procurement cases are considered by the Services Capital Acquisition Plan Committee, Defence Procurement Board (chaired by the defence secretary) and Defence Acquisition Council (chaired by raksha mantri). These committees meet on a monthly basis or even more often, on an as required basis. With the implementation of DPP-06, the procurement time is certainly expected to reduce considerably.

Defence planners have always been kept in the lurch by the MoF by not sanctioning the budget till quite late. In some cases, the budget has not been sanctioned till the plan has gone through almost half way. The sanction details of the plans are as follows:

- The Sixth Plan (1980-85) was approved by the Cabinet Committee on Political Affairs (CCPA) on August 15, 1982.
- The Seventh Plan (1986-90) was approved in August 1988.
- The Eighth Plan (1991-95) had to be rescheduled from 1992 to 1997 due to the Gulf War, but it never got approved.
- The Ninth Plan (1997-2002) was approved by the Cabinet Committee on Security (CCS) in December 1997.
- The Tenth Plan (2002-07) remained under discussion with the MoF till December 2004 when a revised plan projected by the MoD was finally agreed to by the MoF.

As regards the Eleventh Plan (2007-12), the details are as follows:

- Process initiated in February 2005 by HQ IDS (Headquarters Integrated Defence Staff).
- Integrated plan has been oriented towards 'capability' development instead of the 'equipment' fixation.
- LTIPP projection - Rs. 8.10 lakh crore.
- Revised to Rs. 6.99 lakh crore as per reduced availability indicated by the MoF.
- Further refined to Rs. 6.45 lakh crore and approved by raksha mantri (RM) in July 2006.
- Proposed average annual growth : revenue - 8 per cent, capital - 16 per cent and overall – 12 per cent.
- Still under consideration of the MoF. Nine months of first plan year already completed.

Besides delaying the sanction of plans, the MoF does not give any indication of how much would be the allocation for the forthcoming year/plan, forcing defence planners to resort to 'blind' planning. Under such circumstances, defence planning has generally been done based on an ad hoc figure of the previous allotment + inflation + certain meagre amount of increase. Correctly speaking, a practical "threat-based plan" should have been prepared with no reference to earlier allocations and then letting the MoF draw the line as per finance available, thus, taking the responsibility for the consequent inadequacy in security. Over the years, defence has made the mistake of cutting down the plan voluntarily instead of forcing finance to do so which has resulted in the MoF making less and less allocations.

Now that the economy is looking up, the MoF can afford to give more clarity and assurance in allocation of the defence budget. This "in-principle" assurance can be given by telling the armed forces that the forthcoming budget will be a certain fixed percentage of the expected GDP or it could be stated as a fixed increase over the previous budget.

Table 2 shows the increment in terms of percentage with respect to the previous year's budget and it can be seen that it averages to nearly 13 per cent.

Table 3 shows the defence budget as a percentage of the GDP and it can be seen that generally it has been less than 2.5 per cent, averaging to about 2.3 per cent.

DEFENCE FINANCE

Table 2		
Year	Budget (Rs. in crores)	Increment (%age)
91 - 92	16,347	-
92 - 93	17,582	7.55
93 - 94	21,845	24.25
94 - 95	23,245	6.41
95 - 96	26,856	15.53
96 - 97	29,505	9.86
97 - 98	35,278	19.57
98 - 99	39,898	13.10
99 - 00	47,071	17.98
00 - 01	49,622	5.42
01 - 02	54,266	9.36
02 - 03	55,662	2.57
03 - 04	60,066	7.91
04 - 05	75,856	26.29
05 - 06	80,800	6.52
06 - 07	89,000	6.44
		Average 11.90 %

Table 4 shows year-wise data of what the future budget can be, based on 12 per cent and 15 per cent increase with respect to the previous year's budget. It also shows how much percentage of the GDP the yearly incremented budget amounts to. The starting point is the budget of 2006-07 which was Rs.86,000 crore (Revised Estimates), the GDP was Rs. 4,100,600 crore, amounting to 2.10 per cent of the GDP. The estimated GDP growth till 2021-22 has been taken as 8 per cent yearly increase, with 5 per cent inflation.

From Tables 3 and 4, it can be seen that with 12 per cent increase over the previous year's budget, the defence budget as a percentage of GDP drops steadily from 2.10 per cent in 2006-07 to 1.84 per cent in 2021-22. Even with 15 per cent assured increase over the previous year's budget, the percentage of GDP of the defence budget steadily increases from 2.10 per cent in 2006-07 to 2.73 per cent in 2021-22. Thus, it can be seen that the defence budget will not cross 3 per cent of the GDP figure even if the MoF gives an assurance of 15 per cent increase over the previous year's budget for planning purposes. In fact, this percentage

Year	Budget (Rs in crores)	GDP (Rs in crores) (at market prices)	Percentage of GDP
1991-92	16,347	6,53,117	2.50
1992-93	17,582	7,48,367	2.35
1993-94	21,845	8,59,220	2.54
1994-95	23,245	1,01,2770	2.30
1995-96	26,856	1,18,8012	2.26
1996-97	29,505	1,36,8209	2.16
1997-98	35,278	15,22,547	2.32
1998-99	39,898	1,74,0985	2.29
1999-00	47,071	1,95,2035	2.41
2000-01	49,622	2,10,2375	2.36
2001-02	54,266	2,28,1058	2.38
2002-03	55,662	2,45,8084	2.26
2003-04	60,066	2,76,5491	2.17
2004-05	75,856	3,12,6596	2.43
2005-06	80,800	3,56,7177	2.27
2006-07	86,000	4,10,0600	2.10
Average			2.32

will drop further since the considered growth of GDP in the calculations is taken as a modest figure of 8 per cent, with inflation rate of 5 per cent. In reality, GDP growth is expected to be higher.

Table 5 shows the growth rate in the revenue budget over the previous years vis-a-vis the inflation in that year. It can be seen that during certain years, the inflation has been higher than the increment in the allocation of the revenue budget.

Some of the finance experts have made public statement that if the economy grows at 8 per cent, we will have enough money for development and we will be able to spend 3 per cent of our GDP on defence in five years or so. Some others have said that India will become a credible nation only if it grows at 8 per cent and spends 4 per cent of the GDP on defence for the next 10 years. Well, the above tables show that with the increment in the defence budget

With the increment in the defence budget allocation averaging around 13 per cent in the last decade, we still have telling gaps in our security stature.

YEAR	GDP	12% Increase	%AGE of GDP	15% Increase	%AGE of GDP
2007-08	46,33,678	96,320	2.08	98900	2.13
2008-09	52,36,056	1,07,878	2.06	1,13,735	2.17
2009-10	59,16,743	1,20,824	2.04	1,30,795	2.21
2010-11	66,85,920	1,35,323	2.02	1,50,415	2.25
2011-12	75,55,090	1,51,561	2.01	1,72,977	2.29
2012-13	85,37,251	1,69,749	1.99	1,98,923	2.33
2013-14	96,47,094	1,90,119	1.97	2,28,762	2.37
2014-15	10,90,1216	2,12,933	1.95	2,63,076	2.41
2015-16	12,31,8374	2,38,485	1.94	3,02,537	2.46
2016-17	13,91,9763	2,67,103	1.92	3,47,918	2.50
2017-18	15,72,9332	2,99,155	1.90	4,00,106	2.54
2018-19	17,77,4145	3,35,054	1.89	4,60,122	2.59
2019-20	20,08,4784	3,75,260	1.87	5,29,140	2.63
2020-21	22,69,5806	4,20,292	1.85	6,08,511	2.68
2021-22	25,64,6261	4,70,727	1.84	6,99,787	2.73

allocation averaging around 13 per cent in the last decade, we still have telling gaps in our security stature. If we want to become a “regional power,” then we have no choice but to step up our GDP and expenditure on defence. It will, therefore perhaps be a good idea for the MoF to give an assurance to the MoD of 15 per cent increase every year over the previous year’s budget for making our annual, five - yearly and Long-Term Integrated Plans (LTIP) in a more meaningful way.

Year	Growth Rate Inflation	(Revenue)
2000-01	5.74	7.2
2001-02	2.20	3.6
2002-03	6.96	3.4
2003-04	6.13	5.5
2004-05	3.82	6.5
2005-06	8.05	4.7
2006-07	6.35	6.0
Average	5.60	5.35

DETAILS OF 2006-07 BUDGET

The overall budget for the three Services in 2006-07 was Rs. 89,000 crore as against projected Budget Estimates (BE) of Rs. 96,000 crore which was 2.10 per cent of the GDP. At the Revised Estimate (RE) stage, it was reduced to Rs. 86,000 crore. The details are as follows (Table 6):

2006-07 Total Budget Allocation (Rs. in crores)			
Service	Revenue	Capital	Total
Army	32,298.64	10,399.47	43,604.61
Navy	6,713.18	94,27.85	16,219.63
Air Force	9,858.41	15,006.50	25,093.86
Others	2,671.77	2624.18	4,081.90
Total	51,542	37,458	89,000

DETAILS OF 2007-08 BUDGET

The budget for 2007-08 totals to Rs. 96,000 crore as against last year's Rs. 89,000 crore and actual spending of Rs. 86,000 crore. The 2007-08 budget is 14.11 per cent of Central Government Expenditure and 2.08 per cent of the GDP. Increase over last year's budget: Revenue 4.92 per cent, Capital 11.92 per cent and Overall 7.87 per cent. Percentage of distribution between the Services: army 48.77 per cent, navy 18.34 per cent, air force 28.39 per cent and R&D 6.13 per cent.

2007-08 Total Budget Allocation (Rs. in crores)			
Service	Revenue	Capital	Total
Army	34,086.76	11,634.18	46,828.44
Navy	69,68.25	10,561.19	17,611.30
Air Force	1,01,93.01	16,828.73	27,259.09
Others	28,29.98	28,97.90	4,301.17
Total	54,078	41,922	96,000

CONCLUSION

In conclusion, it can be said that defence finance is nothing but application of economic principles to defence related issues. To ensure that proper planning is done, a lot of integration and joint work is required not just between the

individual Services, IDS and MoD but also between the MoD and MoF. As has been highlighted, the MoF today is quite unaware of the futuristic threats and the capabilities ladder that the defence forces need to climb to counter these foreseeable threats and achieve regional or global status. As a result, they remain tight-fisted in allocating the required budget projected by the Services. That besides, sanctioning of the budget is also unduly delayed, leaving the Services in the lurch. This upsets not only the planning process but also the expenditure pattern.

The Ministry of Finance must seriously consider giving assurance to the defence forces that they will get an annual increment of at least 15 per cent over the previous year's budget. Only then will the defence forces be able to do meaningful planning towards capability build-up. If India hopes to attain the status of at least a regional power, the mistakes made by us need to be rectified post haste, and considering that our economy is galloping, we need to simultaneously enhance our national power by creating strong and credible defence forces adequately backed by nuclear, biological, chemical (NBC) capabilities. We now should be talking of defence and development instead of defence or development.

As far as the defence forces are concerned, they must ensure that they spend the allotted budget wisely and try and get the maximum bang in the allotted budget. They must take a holistic view of the equipment to be procured and consider all aspects of its journey from womb to tomb, including disposal and life cycle costing. They need to also seriously consider outsourcing some of their requirements to effect savings.

References

- *Defence Procurement Procedure (Capital Requirements)*, Ministry of Defence, Government of India, 2006.
- Seminar on Defence Finance - May 27, 2006.
- Document on Defence Services Estimates of 2006-07 and 2007-08.
- Document on Demands for Grants of 2006-07 and 2007-08.
- *Economic Survey of India for 2006-07*, Government of India.

TOWARDS CONTINUOUS MILITARY EDUCATION IN THE IAF A NEED FOR YESTERDAY

M. MISRA

“There is a reason they are called lessons.” the Griffon remarked, “because they lessen from day to day.”

—Lewis Carol

INTRODUCING EDUCATION

“To adapt and to learn first,” is the foremost human survival trait; this separates us from other animals. To be able to continue doing this for the last few centuries has perhaps kept the Zargons¹ away. This most primitive form of survival instinct is called learning or education. Imagine an Indian tribe which for centuries has sailed its canoes on the river at their doorstep. So long as the rate of technological change in such a community stays slow, so long as no wars, invasions, epidemics or other natural disasters upset the even rhythm of life, it is simple for the tribe to formulate a workable image of its own future, since *tomorrow merely repeats yesterday*. Then, one day, this visualisation was changed by a simple phenomenon of nature, perhaps a flash flood or the river ran dry. The tribe adapted to this change, learning the lesson that *tomorrow may be different, influenced by today*. So sprang out education. Education springs from some lesson from the past or an image of the future. Essentially, if the image of the future held by a cadre is grossly inaccurate, its education system will betray its youth. Education, however, is not just something that happens in the head, it

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1. An imaginary intelligent lizard from “The Star Wars.”

involves our muscles, our senses, our hormonal defences, and our total biochemistry. Nor does it occur solely within the individual. Education springs from the interplay between the individual and a changing environment. The movement to heighten future consciousness is education. Since ancient times, survival of the fittest has been the *nom de guerre*. War has been a testing ground for survival.

Experience demonstrates through history that the best prepared and dynamically led armed forces prevail in combat. Whereas war-fighting ability is an acquired skill honed by training, practice and directed by leadership, superior education is the best form of preparation, the foundation for any training.

Superior education, contiguous with training, forms the core of this preparedness and provides the structure for deterring potential enemies or, if necessary, defeating adversaries in battle. It is equally important to note that education, contiguous with training, has also played an integral role in preparing air and now aerospace forces for new and challenging types of military operations in the modern times.

An air force officer's education must emphasise critical thought, enabling sound decision-making, regardless of the situation, while an air force officer's training provides the skills necessary to master the air force's core competencies. A dynamic education and training process spanning an officer's career are essential to the air force's readiness to attain military objectives and contribute to national security. The Indian Air Force (IAF) is an emerging force to reckon with, but its education practice needs to be reviewed if it has to step into the envisioned tomorrow.

AIM

The aim of this paper is to examine the necessity of the correct identity of ME (military education) and its continuity for the officers of the IAF. In doing so, the paper shall allay the concept of one time education and examine new techniques in education. A brief review of the IAF in-service HRP(human resource policy) and suggestions for changes in curricula of the current concept has been incorporated as a value addition.

“Just as all education springs from some image of the future, all education produces some image of the future.”

-Alvin Toffler

PROCESS OF EDUCATION

Webster defines *education* as the process of educating or teaching. *Educate* is further defined as “to develop the knowledge, skill, or character of...” Thus, from these definitions, let’s assume that the purpose of education is to develop the knowledge, skill, or character of officers. Unfortunately, this definition offers little unless we sub-define words such as *develop*, *knowledge*, and *character*.

What is meant by *knowledge*? Is it a body of information that exists “out there” apart from the human thought processes that developed it? In ancient Greece, Socrates argued that education was about drawing out what was already within the student. Once one gets beyond a dictionary definition, what emerges is that the *meaning* we assign to a word is through a *belief*, not an absolute fact. What are these beliefs? Out of the many examples, let’s look at a few to bring out the key features.

*“The central task of education is to **implant a will and facility for learning**; it should produce not learned but learning people. The truly human society is a learning society, where grandparents, parents, and children are students together.”*

-Eric Hoffer

*“The only purpose of education is to teach a student how to live his life—by **developing his mind** and equipping him to deal with reality. The training he needs is theoretical, i.e., conceptual. He has to be taught to think, to understand, to integrate, to prove. He has to be taught **the essentials of the knowledge discovered in the past**—and he has to be equipped to acquire further knowledge by his own effort.”*

-Ayn Rand

*“The one real object of education is to leave a man in the condition of **continually asking questions.**”*

-Bishop Creighton

There is no definition of education that is agreed upon by all, or even most educators. The meanings they attach to the word are complex beliefs, arising from their own values or differential experiences. If it is a complex belief, one also must examine the *purpose* of education and the functions of education.

Purpose is the fundamental goal of the process, an end to be achieved. *Functions* are other outcomes that may occur as a natural result of the process by-products. For example, some teachers believe that the transmission of knowledge is the primary *purpose* of education. The knowledge transfer from the organisation to the real world is something that happens naturally as a consequence of possessing that knowledge, a *function* of education.

Hence, if one was to draw out the major features of the argument, one can surmise that education is:

- Developing knowledge, character and the preparation to absorb a skill.
- It blossoms or leads out the inherent quality of a learner.
- It is a continuous process that in its ideal state should reinforce thought and mind together, leading to development of the brain.
- It is to do more with the preparation to learn and acquire knowledge than to learn by itself.

DIFFERENTIATING TRAINING

Why must we differentiate education from training? While education and training are linked in application, they are distinct in purpose, with each producing markedly different results. In essence, education teaches broad concepts and communicates information upon which to base decisions, whereas training teaches skills necessary to accomplish a task. Military education is essential to the professional development of officers, strengthening their abilities to lead and manage.

Education programmes expand knowledge and increase understanding of the role of armed forces in fulfilling our national security strategy.

Education programmes prepare members to successfully anticipate and meet challenges across the range of military operations.

Education pushes along training.

Training is the process of imparting knowledge and teaching specific skills required to accomplish tasks under defined conditions. While education teaches the individual **'how to think,'** training teaches the individual **'how to do.'** It is very important to understand this fundamental difference as one can **'educate to train'** but one **'cannot train to educate'** Most of the current education programmes in the IAF have notation training attached to them. This must be corrected.

"How do you impart to a 19-year-old the intelligence, the tactical skills, the decision-making ability—both tactical and moral—to know when to fire and when to protect? The clever rifleman knows how to hit the target; the wise rifleman knows which targets to hit."

- General Krulak

MILITARY EDUCATION

What Is Military Education ?

One can safely term all education in the armed forces as ME (military education). Military education is aimed at reinforcing the inherent intelligence on all fronts for an officer to be able to execute his charter efficiently and prepare him to face all eventualities. Last, but not the least, it must create a questioning persona. The essentials are that education must have the characteristics as listed below and any study of ME should be in the light of these characteristics.

Focussed on a clear objective.

A continuum must be maintained over the span of a career.

Invigorating and produce learning.

Stimulating to produce retention.

Produce more desire to learn.

Is there a need here to differentiate military education from the conventional kind? No ,since education is such a vast subject, one would only create more confusion, hence, it is better to extract the essence of the quality and identify the essentials for ME which should form its curricula.

Does ME mean only military studies? Besides just providing knowledge of military studies and the three 'R's,' there are certain other characteristics which

are included in ME. It must also include behavioural aspects and personality development which will effect the character of an officer. Wisdom, ethics, courage, integrity, leadership, the list is endless and diverse. These would be called institutional development qualities (IDQ). Institutional education is required for development of these traits. The earlier it is commenced in a *controlled environment*, the better the output i.e. better leaders with deeper ingrained values and sustained character.

"The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn."

-Alvin Toffler

Genesis of ME

During this era of complex military transformation, history suggests that success or failure in the endeavour depends critically on *intellectual leaders* as agents of transformation. The chief purpose of advanced military education is to create such intellectual leaders. They provide purpose, direction and motivation to the unconvinced, the ignorant and the uneducated, whether a subordinate, superior or peer. Intellectual leaders lead the unconvinced to seize new ideas, topple the outmoded, as andwhen necessary. For a change to take place, the organisation

The chief purpose of advanced military education is to create intellectual leaders. They provide purpose, direction and motivation to the unconvinced, the ignorant and the uneducated.

either requires a transformational thinking led by heretics or revolutionary thinking. The intellectual leader dissents not for the sake of heresy. His main purpose is to overturn the irrational and the irrelevant embedded in the current orthodoxy as it becomes increasingly more dogmatic over time (the primary risk of a doctrine). The intellectual leader may also defend the current orthodoxy when it is under irrational assault.

A student becomes an intellectual leader by first becoming an 'expert learner.' Any

successful system of advanced military education must begin by creating the academic conditions that allow the expert learner to flourish. These conditions include rigour, creativity and motivation. Together, they forge the first links in a chain of learning by recognising the limits of our own knowledge and the extent of our personal ignorance. How did ME start?

Advanced military education was born among the ashes of the Peloponnesian War (431-404 BC).

Advanced military education was born among the ashes of the Peloponnesian War (431-404 BC). For almost 30 long years, an Athenian coalition fought against Sparta and her allies. Increasingly, as the war raged on, Athenian strategy and even democracy itself became dominated by a series of demagogues who appealed to the base instincts of the masses as they tried to sell a flawed plan of war. Socrates was one of the most critical opponents of the demagogues. Plato, one of his students, systematised Socrates' teachings into an extended collection of writings. These writings eventually became part of the Socratic method of instruction, a process where student and teacher engage in a dialogue aimed at finding the truth and essence of the topic at hand. Less than a hundred years later, Aristotle brought Socrates's relentless method of dialectical interrogation into the formal classroom.

Socrates,² for his part, understood perhaps the most essential insights of higher education: learning requires a change in the *emotional state of mind*. Quite simply, the student must be emotionally engaged to take learning to a higher level of understanding. The Socratic method used stimulating dialogue, the emotional level of engagement, and could become quite intense over the heated debate and inquiry into key questions and fundamental issues of vital interest. From a cognitive standpoint, studies show that the greater the emotional investment paid by the student, the longer and more indelibly he retains the Socratic method. By setting up the Peripatetic School in the Lyceum at Athens, Aristotle extended the method further into a general analytical approach for the objective investigation of the natural world. This approach eventually evolved

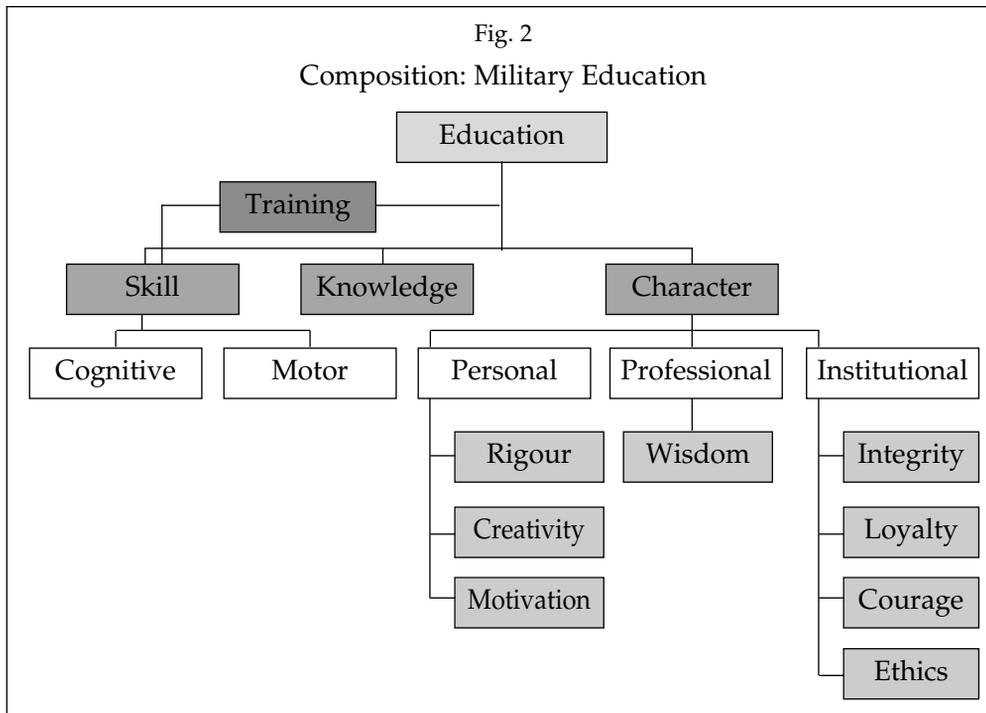
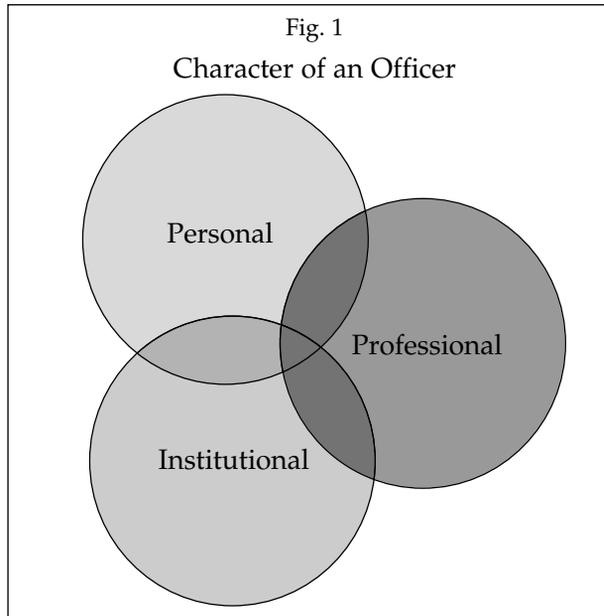
2. James Schneider Jr., *Transforming Advanced Military Education For the 21st Century Army* (January 2005).

into the scientific method. Today, virtually every graduate-level seminar, both military and civilian, is patterned after the Socratic method of dialogue and inquiry after truth. Together, then, the Socratic method with its developing analytical dimension and the drive to victory began to transform the Greeks, their intellectual heirs, the Romans, and eventually the Western world.

The next major event took place in 1806.³ In 1806, after suffering a humiliating disaster at the dual battles of Jena-Auerstadt, Prussia, under Frederick William I, met its own genius of defeat. The king decided that the only way to transform his semi-feudal nation was through education. He totally revamped Prussian education in laying the groundwork for the modern university system. Military education was modernised under the intellectual leadership of Gerhard von Scharnhorst, Augustus von Gneisenau and Carl von Clausewitz. The Prussian method of military education set the standard for military learning well into the 20th century. Early in that same period, the modern general staff emerged as a direct lineal descendant of objective inquiry and critical investigation worked out by Socrates, Plato and Aristotle. The modern general staff system developed three key innovations that helped establish military science as a viable discipline of learning in its own right: **the staff ride, the *kriegspiel* or war-game and the case study**. By the beginning of the 20th century, virtually every modern military force sought to emulate the German style of advanced military education. From here on, the modern ME was born.

The aim of modern ME is to create thinking leaders and expert learners. An expert learner is taught to recognise his own limitations. Based on his professional experience, he is taught to develop a personal theory of war: simply a reliable and meaningful system of beliefs about the way war works; a kind of map that helps him establish the underlying rules of the game. A working theory of war helps the expert learner establish norms and patterns of expectation and anticipation. This further helps him develop situational awareness. He is able to recognise patterns that novices do not see and anomalous events that violate expectation, since these anomalies or subtle differences are too small for the unschooled to notice. Pattern recognition provides the expert learner with the big picture—a holistic, systems view

3. Schneider Jr., *Ibid.*



of the operational environment – or to appreciate the big picture, **Gestalt** for short .

It is a misnomer to think and interpret that ME is a study of military sciences only. As shown in Fig. 1, the character of an officer is a controlled combination of three main qualities.

These identifiable but intangible qualities, as depicted, are overlapping and depending on the situation, one of these qualities may be predominant. Hence, they should all be part of basic ME curriculum. In this form, it would be called PME (professional military education). As is discernible in the composite picture, the above training is just a small part of this PME. Under skill, knowledge and character, the other sub-heads broadly depict what ME should comprise.

MILITARY EDUCATION

Essential Qualities of Military Education

With time, certain basic tenets identified for ME are as follows:

Flexibility to adapt emerging technologies and their applicability.

Versatility to encompass the full range of military operations in education programmes, including expansion or open-ended for joint applicability.

Balance between academic concept, operational reality, and historical perspective.

Systematic approach involving mentally challenging and setting realistic educational goals.

Synergy through complementary instructional methods, mentoring efforts, and practical exercises.

Persistent education that spans the individual's career.

Contiguous. It should be contiguous with the training i.e. each should complement the other.

Keeping these tenets in mind, ME programmes are demarcated into three basic types of programmes, each comprising some basic tenet. The criterion is mainly what, when and how the ME is executed.

IDQE (Institutional Development Qualities Education)

This is termed as PME (professional military education) in most forums. This is

the most basic form of ME and is primarily based on character development i.e. to produce thinking leaders and intelligent learners. Its aim is to develop critical thinking among the pupils and promote empathy learning. IDQE offers a curriculum of instruction and study that provides individuals with the skills, knowledge, and understanding to function in leadership roles and make sound decisions in progressively more demanding command and staff positions. IDQE has as its primary themes the development of leadership, management, and communication skills; the employment of combat forces; the military, political, economic social and psychological dimensions of national security. Understandably, this education has a vast expanse and mostly has intangible results. Qualities which are essential to leaders i.e. duty, honour, faith, courage, perseverance, confidence, approachability, adaptability, compassion and vision are honed. IDQE must be taught in an environment which offers a complete feedback loop. It is essential to feed what can be digested.

Continuous Education

The second form of ME is entirely information-based and maintains a continuum over the entire career span. It is progressive in nature and analogically like 'drip irrigation' i.e. continuous supply in small packets over long durations of time. It contributes to an unbroken continuum of education by providing educational opportunities that complement the periodic education provided in IDQE and enhances the understanding of officers through courses within a particular functional area. It is here that the contiguity with training is actually tested. It fosters a greater understanding of certain aspects of military missions and operations. This is achieved through a programme of diverse courses designed to increase both the depth and breadth of knowledge within a particular field of interest. It complements the objectives of IDQE by sharpening problem-solving skills, refining the thinking process, and increasing sound professional judgment. It spans the range of military operations and is offered to all members at all levels of responsibility. This system of incremental learning and constant improvement is also called the **Kaizen**.

Voluntary Education

The third and the most important form of education fosters self-motivation, causes voluntary education and self-cognition. Self-cognition is the initial stage of self-development in an officer's military professional training. It is expedient to organise and conduct the work at this stage along three principal lines: self-identification, self-study, and self-evaluation.

Self-identification enables an officer to better realise and understand the set of requirements that are established for him as a military professional, to understand his tasks, and to get a better perspective on his further military professional advancement.

Self-study is designed to objectively identify one's own professionally important qualities and compare them with the requirements that are set for the office. As a rule, self-study is based on the analysis of one's own actions, conduct, and the specific results of professional activity, with close attention being paid to critical comments on the part of an officer's superiors/peers.

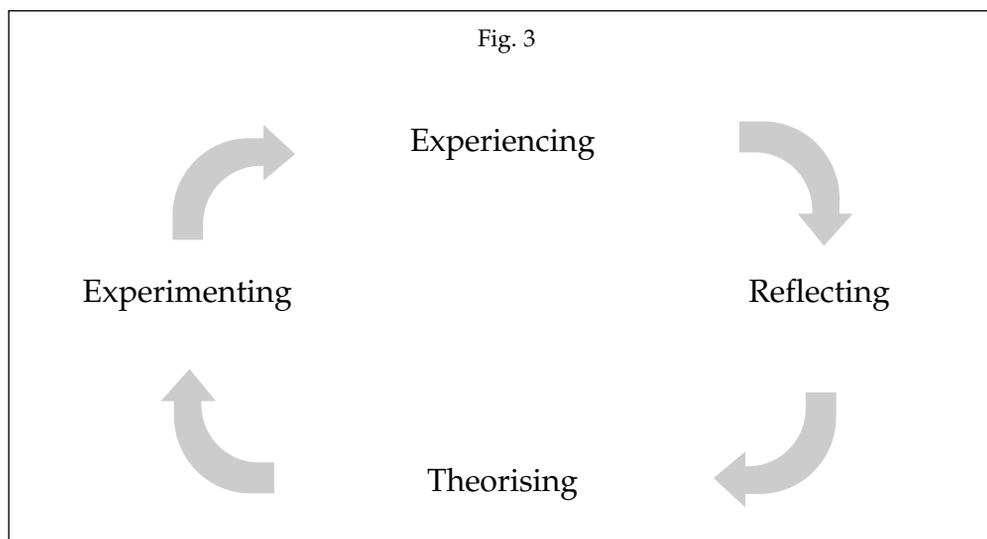
Self-evaluation expresses an officer's opinion about himself as a military professional. Objective self-evaluation plays an important role in both organising the self-development process and in controlling one's behaviour.

Self-study and self-evaluation lead officers to embark on a self-development programme. The main form of this method is either through distant learning programmes or enrolment in education outside the establishment and voluntary education is the result.

Techniques of ME and the Learning Cycle

During earlier research⁴ on the issue of the learning curve and the paradox of stagnation of SE (self-evaluation), it was learnt that the steeper the curve, the lesser is the SE and the greater the chances of stagnation. Hence, it is preferable

4. Paper submitted on technology, motivation.



to have a constant learning cycle than to have a bright star burning out. How does one manage this? Some techniques of education need to be reviewed. To be able to understand this, one must first understand the process of learning or the learning cycle. One of the foremost theories is Kolb's learning cycle.⁵ Fig.3 shows the basic learning cycle.

The process of learning goes through four critical events these are: experiencing, reflecting, theorising and experimenting. Each of these events can be influenced by external events to ease the process of learning

Experiencing. First of all, we have an experience. Most experiences are not worth further movement on the cycle as we are already familiar with them and they need no further interpretation and, hence, no need for learning. If the event creates a new synapse, it proceeds to the next process.

Reflecting. Having experienced something which does not fit well into our current system of understanding, we then have to stop and think harder about what it really means. This reflection is typically a series of attempts to fit the experience to memories and our internal models.

Theorising. When we find that we cannot fit what we have experienced into

5. ChangingMinds.org Kolbe learning cycle.

any of our memories or internal models, then we have to build new models. This theorising gives us a possible answer to our puzzling experiences.

Experimenting. After building a theoretical model, the next step is to prove it in practice, either in 'real time' or by deliberate experimentation in some safe arena. If the model does not work, then we go through the loop again, reflecting on what happened and either adjusting the model or building a new one. The staff ride, the *kriegspiel* or war-game and the case study can now be analysed based on this model.

Based on how we can influence these four events, new techniques of education have emerged. Now we can analyse some techniques.

NEW TECHNIQUES OF EDUCATION

Active Learning

Socrates had brought out that learning is best in an intense environment. **Active learning** is an umbrella term that refers to several models of instruction that focus the responsibility of learning on learners. Students who actively engage with the material are more likely to recall information later; rather than being behaviourally active during learning, learners should be cognitively active. A **class discussion** can be held. These discussions should be held between prepared, knowledgeable participants. A think-pair-share activity takes place when learners take a minute to ponder over the previous lesson, later discuss it with one or more of their peers, finally to share it with the class as part of a formal discussion. It is during this formal discussion that the instructor should clarify misconceptions. A short written exercise that is often used is the "**one minute paper.**" This is a good way to review materials. During my tenure as a instructor and later at the squadron, it was found that this technique creates the most conducive environment for learning. Active learning happens when students are given the opportunity to take a more interactive relationship with the subject matter, encouraging them to generate rather than simply to receive knowledge. In an active learning environment, teachers facilitate rather than dictate the students' learning (**Kolbe cycle experiencing**).

Critical Thinking

It consists of the mental process of analysing and evaluating statements or propositions that have been offered as true. It includes a process of reflecting upon the specific meaning of statements, examining offered evidence and reasoning, in order to form a judgment. Irrespective of the sphere of thought, a critical thinker will raise the following questions (**Kolbe cycle reflecting**).

Critical thinking:

raises vital questions and problems, formulating them clearly and precisely;
gathers and assesses relevant information, using abstract ideas to interpret it effectively;

comes to well-reasoned conclusions and solutions, testing them against relevant criteria and standards;

thinks open-mindedly within alternative systems of thought, recognising and assessing, as need be, their assumptions, implications, and practical consequences; and

communicates effectively with others in figuring out solutions to complex problems.

Experiential Learning (EL)

EL involves an immersion into structured experiences, combined with meaningful reflection, as a way to maximise learning. The structured experiences run through the gamut of classroom “solution-finding” activities. The experiences are integrated with facilitated reflective processes that help learners explore what happened during the experience, analyse the patterns that emerged, strategise for the next experience and transfer learning to another environment. EL is one of the most effective methods of adult learning for developing tacit knowledge needed by a person or group in order to perform in an organisation. Vis-à-vis traditional learning (where content is delivered through lectures or presentations), experiential learning is participative. It takes place in purposefully constructed “micro-worlds” (or experiential learning laboratories) in which content is delivered and potentials are discovered while the learners are immersed within the context.. The key is to discover and extract the most relevant, appropriate and

therefore, the most meaningful learning. And this is what separates the wheat from the chaff, so to speak (**Kolbe cycle theorising**). The techniques mentioned above should be incorporated in our education programmes.

MILITARY EDUCATION: INDIAN AIR FORCE

It is in order to attend to, and analyse, the education system followed in the IAF, we must evaluate the greater Indian psyche and what fomented this. Let's analyse two thoughts to start with and evaluate the education system by linking them with it.

"Indians believe that there is no country like theirs, no nation like theirsno science like theirs."

-Alberuni

"The Indian educational system, which still bears the imprint of the traditional ritual education, emphasizes the mastery of facts and the memorization of enormous amount of detail."

-Stephen Cohen

Even if one was to ignore the racial overtones and the biased aftertaste, there is an element of truth in both statements. The first one obviously ignores the Socrates *e-ducere*, meaning that the system does not lead out to, or develop, radical thinking. We chose to walk the conventional well trodden path rather than create one ourselves. The second one brings out the obsession with rote, facts and figures rather than create a big picture and develop opinion from a far perspective.

Is this actually the case? A single feature of ancient Indian or Hindu civilisation is that it has been moulded and shaped in the course of its history more by religious than by political, or economic influences. The fundamental principles of social, political, and economic life were welded into a comprehensive theory which is called religion in Hindu thought, the concept being to attain *moksha*, the ultimate state of learning. In modern times, military training is usually given only by the state authorities when recruits join the army. Such was not the case in ancient

6. Har Bilas Sarda, *Hindu Superiority*, pp. 173 - 174.

India. The average citizen and villager was expected to be able to defend his own hearth and home.⁶ The *Arthashastra* expressly lays down that every village ought to be able to defend itself. That such was actually the case in several parts of India would become quite clear from the accounts of Alexander's invasion, as given by the Greek historians. In several places, the Macedonian was opposed not so much by state forces as by the whole population in arms. However, there are several examples based on military training. There can be no doubt that in many of the republican states of the Punjab, the Kathas, the Malavas, the Sibis, etc. every adult used to receive military training of a fairly high but never a comprehensive and universal strategy based on a degree of ME. There were also some cities in the country, famous as centres of military training. Taxila, situated in the northwest, had naturally become a centre of military training.

In the Middle Ages (post-1500), India was governed by a predominantly Mughal ideology with streaks of a particular religious theology. All the rulers with the exception of Akbar, suppressed the prevalent Sanskrit based Indian education system. Hence, though there was rich exchange of Muslim and Hindu theology, all the rulers failed in starting the culture of impartial ME (for selfish reasons). In recent times, under the British rule, the military training was imparted to produce fodder for the trenches in Europe and later, North Africa. No doubt, it changed the education system in general but we were still deprived of an independent military thought. Since the environment was the breeding ground for leaders, the situation was ripe to start with ME but the British kept the concept away, for very obvious reasons.

"We must do our best to form a class who may be interpreters between us and the millions whom we govern, a class of persons Indian in blood and color, but English in taste, in opinions, words and intellect."

-Thomas Macaulay

The circumstantial result was that India generated a bevy of expert administrators and never any leaders. The British were scrupulous enough

7. Charles Grant, *Observations*, 1797.

to keep the knowledge of our heritage away⁷. Though one can say the thought of benefiting from providing ME to Indians did sporadically cross their mind.

As a matter of course, it includes the far-famed Hindoostanee, so often mentioned, but which would be here a branch, and not the whole of the tree. The army in India has, in arduous and trying situations, always vindicated the exalted character of their native country ; and it might be equally wise and just to impart the benefits of scientific knowledge, devoid of which physical and moral energy will remain but comparatively powerful where deep professional thought and the higher order of tactical combinations are indispensably requisite.

— Summcrlandt, May1, 1827

John MacDonald, *Asiatic Journal*, 1827

In the historical backdrop of absence of offensive military campaigns, it is imperative to adopt a critical thinking, a heretical approach to diagnose and fix the defensive mindset on tactics and military education. Can one recall one campaign where the Indian soldier stepped out to invade any other country beyond the Indus in the west or similarly in the east? Historically, India had never invaded another country till 1971. What did that produce? A defensive mindset, weak tactics and underdeveloped ME curriculum. Battles begin in the mind and have to be fought and won there before they transcend to the fields.

India as a nation is emerging as a world leader in knowledge development and is the hub of the economic revolution. It is what one would term the “richest source of potential human resource suitable for use by the West.” There is a knowledge hungry middle class ready to be unleashed. The situation is ripe to breed potential leaders for the transformation from a developing to a developed nation. What we lack is a format of planned military education on character, values, integrity, vision and a uniform culture. An effective military education can provide not only a good knowledge and data base, but also a great testing ground for a larger picture of reforms.

Education in the IAF

The vision and guidelines for ME in the IAF are hidden away in an innocuous AFO called 67/98. It has been comprehensively thought about and covers both officers and men, but is sadly insufficient.

Its aim is to educate the officers and airmen throughout their service. (continuum of education).

It elucidates general education and the contiguity with training.

It lays down responsibility of educational training at Air Headquarters (HQ), Command HQ, and at station level.

It further gives details of education service training and general education.

From here on, the AFO drifts into administrative issues like running of air force schools, etc. Though it is simple to criticise, one must not be dissuaded from doing so. The IAF needs a doctrine, not an order for education. It must start by differentiating education and training. Both terms are liberally used, with cross-purposes. One must start with a commencement point, which must be identified. The education policy/guidelines must have a vision for the future. One can appreciate this by referring to the US Air Force doctrine document 2-4.3 also made in 1998.

Traditionally, the IAF followed an education programme which was based on a concentrated capsule at the beginning of the career. For obvious reasons, we called it *ab-initio* training. This capsule had a wide domain, that is, from essential skill training to financial planning. There was a discontinuity with essential career progression milestones (part B, C, JCC). These milestones were essentially exam-based and the assumption, that if one passed the exam, one had the requisite knowledge and maturity for career progression. There were large gaps in the syllabus and, at times, repetitions. All these have been acknowledged in the HRP 33/2006. Professional skill development went on a parallel programme with no link. There were practically no courses for IDQE. A basic assessment would reveal that the primary causes of the shortfall were:

Failure to distinguish between training and education.

No long-term vision.

Lack of vision.

Lack of coordination.

Predominance of our obsession with testing ,exams and marks.

In 2004, there was a breakthrough, a departure from the standard pattern — the JITT — which was conceived by the Directorate of Training: **“Training can be limited to what is needed and when it is needed,”** a concept of continuum of education. The intention was to allay one-time training, save time and refresh knowledge periodically. It also addressed the shortcomings as listed above.

The concept is still nascent and there is plenty of a slip between the cup and the lip. The least one can say is ,it is a beginning in the right direction. The JITT is applicable to all personnel across the board. The major features are:

The concept recognises that we can provide learning as the need arises and many such training courses over the span of an individuals career is an efficient way of learning.

A regular upgrade of knowledge formally tested would lead to upgrade of position. It recognised the need to identify the gap between HRM of training of manpower and requirement of workforce in the field.

One can observe vicariously and state:

It still did not distinguish between training and education needs.

The premise that men can be used operationally after the basic training needs reevaluation.

Have the non-educational institutions like field units been tasked with what they are not equipped to do? The answer is Yes.

Does the programme address the basic tenets of education?

How is the manpower better utilised by mere availability in an untrained state?

It is obvious that these questions have already been asked and shall shortly be

addressed. Currently, the concept has been implemented for the personnel below officer rank (PBOR) only. However, it is also applicable to officers from inception and has been implemented through the HRP 33/2006.

HRP 33/2006

One can call the HRP a path breaking effort and a landmark in our training policy. One cannot help but appreciate the effort and the thought behind the policy. The HRP identifies certain flaws in the previous programme, namely:⁸

(a) Absence of linkage between the three milestones i.e. OPE (promotion exams, JCC and DSSC).

Frequent and long absence from the units.

Lack of continuity in training and absence of a structured system for recognition of performance during the course.

Removal of superfluous aspects and repetitions.

In addition, it is felt that the following aspects were not considered:

Delineating education from training, in fact, labelling them incorrectly.

The obsession with exams and marking continues.

Distance learning introduced prematurely, when a similar programme had earlier failed in 1994. The presumption that such a curriculum can be taught through distance learning needs reevaluation.

The IAF needs to demarcate distance learning from correspondence. Use of e-correspondence is limited. This fact is elaborated later.

Notwithstanding, let us do a unbiased analysis and bring out the merits. The term **in-Service training** is used to describe the policy. In-Service courses are a term introduced to explain the periodic education as per JITT. They are an integral part of Service training and human resource development. With the passage of time, a need was felt to rationalise these courses, and, at the same

8. Starter kit for distance learning programme faculty of DL, IAF.

time, integrate them with the career progression of an officer wherein each course will be instrumental in shaping one's career. With this criterion in consideration, a review of courses was carried out and a new training pattern was started with effect from January 2006. This pattern is called the "In -Service Training". In-Service courses have been divided into three broad categories:

- Mandatory Courses.
- Desirable Courses.
- Job Related Courses

Mandatory Courses. This category consists of four courses, two being common courses for officers of all branches and two are branch specific professional courses. The Basic Air Staff Course (BASCO) and Intermediate Air Staff Course (IASCO) have been designed as common courses for officers of all branches. Branch specific, Basic Professional Knowledge Course (BPKC) and Advance Professional Knowledge Course (APKC), have been designated as professional courses. Successful completion of BASCO and BPKC is a mandatory qualifying requirement for promotion from the rank of flight lieutenant to squadron leader, and successful completion of IASCO and APKC is mandatory for promotion from the rank of squadron leader to wing commander. Each mandatory course has been given a certain weightage.

Desirable Courses. As the name suggests, these are courses whose qualification is considered desirable for the career progression of an officer. The detailment for these courses would be by selection (entrance test and/or merit). Herein, lies the list of our prized courses like FCL, QFIC and clubbed at the bottom is DSSC.

Need-Based Courses. These are generic courses based on the organisational needs. They are part of the overall training that is carried out across all branches and institutes of the IAF and other establishments. They are designed to assist an officer in discharging his duties and, thus, can also be referred as 'job related' courses. They do not carry any separate weightage. If one was to recall the IDQE, they were the same as organisational needs. Leadership courses run by

C-LABS (College of Leadership and Behavioural Sciences) are listed under this label, namely, **need-based courses**. The policy is silent about the future path or the education beyond that.

Before we comment upon the in-Service training, it is in order to examine similar policy in other major air forces. Let us examine the policy of the USAF. The USAF has identified four levels of education. The continuum of education spans an airman's career. It can be viewed broadly as consisting of these levels:

Accession. Building a GSK of the organisations, customs, courtesies, doctrine, and heritage while instilling a sense of service.

Primary. Primary programmes further develop the sense of service identity while developing teamwork, leadership, and fundamental knowledge of air force organisational command, forces, and functions as well as individual skills in an air and space discipline.

Intermediate. Intermediate programmes continue to build upon previous levels by imparting knowledge of aerospace power across the range of air force and military operations, and within joint and multinational operations while preparing individuals for staff and command positions

Senior. Senior programmes further develop the war-fighting and war-winning intellect while also preparing individuals for senior leadership responsibilities in the command and employment of aerospace power.

The USAF PME system is structured on a three-step basis⁹. This can best be represented by the three major PME schools at:

Maxwell Air Force Base-Squadron Officer School (SOS).

Air Command and Staff College (ACSC).

Air War College (AWC).

The key rationale behind the USAF PME system is the desire for the preparation of all career officers for the assumption of command and staff duties.

⁹ Lieutenant Colonel William Bruenner, *A Comparison of Professional Military Educational Systems*.

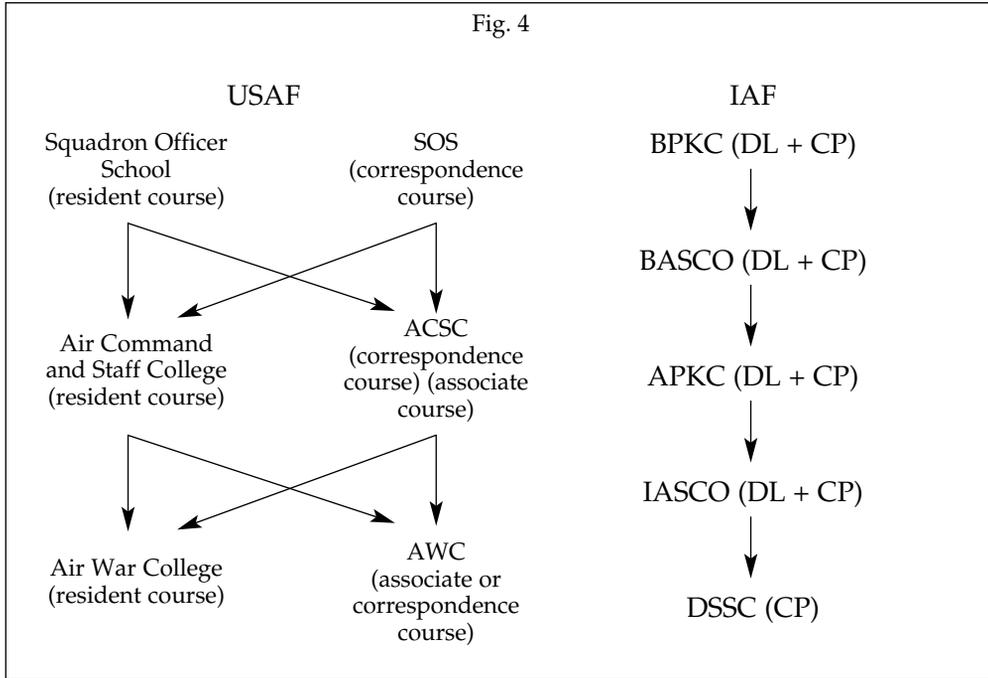
Under ideal conditions, this would be attainable through resident schooling only at the lowest (SOS) level, where students are selected on the basis of quotas to be filled by the major air commands. Even there, in practice, only about 50 per cent of those eligible can attend. At the ACSC level, the percentage drops to 18 per cent. The availability of comprehensive correspondence courses at all three levels through the USAF Extension Course Institute is an important factor in enabling active duty and reserve officers who are not able to attend the resident courses to further their professional military education. However, certain aspects of resident training cannot be provided in a correspondence course. The idea of substituting correspondence for resident training has received special emphasis during the last few years. The basic pedagogical methods employed in these schools are:

The lecture, presented to the entire class (usually supplemented by a question-and-answer period) for conveying basic principles.

The seminar, involving student or faculty led discussions among groups of 12 to 15 students, for expansion of the ideas presented in the lectures and for their practical application.

While textbooks sent through the mail can convey many of the ideas presented in the resident school lectures (provided the books are kept up to date), there is no correspondence course equivalent of the seminar discussions, where the individual experiences of the participants combine to provide the sum of knowledge required to solve the seminar problems. Therefore, the air force formulated the associate programme of the Air War College, whereby groups of participants at various installations not only receive instructional material but also meet periodically and conduct seminars similar to those of the resident course at Maxwell. The USAF is implementing a similar programme at the ACSC level. The officers participating in the correspondence and associate courses receive credit for course completion in their personnel records similar to that of officers who attend the resident courses.

It is advisable not to draw direct parallels as even the mighty USAF



acknowledges flaws in its system. There is one aspect which is appreciable i.e. the utility of the distance learning (DL) is understood, but it has been suitably modified so that a maximum number of officers go through a resident programme (alternate progression). In addition, the utility of critical learning and thinking is fully utilised through the seminars.

Curriculum

The four core areas of study that provide the foundation of an officer's ME are:¹⁰

- Profession of Arms.
- Military Studies.
- International Security Studies, Communication Studies.
- Leadership Studies.

¹⁰ Bruenner, Ibid.

These can be suitably demarcated into the CP and DL programmes. This paper shall examine the IASCO (Intermediate Air Staff Course) syllabus in the light of these five sub-sections. The syllabus of IASCO is wide and does not lay down the demarcations regarding what is studied under each programme. There are four sections of study, namely:

Administration, Organisation, Law, Accounts, Security, Intelligence, Logistics, Technical.

Staff Duties, Management, HRM, Education, Medical.

Air Power, Military History, Meteorology.

Regional Studies.

One does not have to draw parallels among the four core areas mentioned earlier and the IASCO, but the absence of a few aspects in the curriculum are conspicuous. Leadership studies is one of them. The major part of the curriculum is repetitive and cannot create a motivation to learn. Basically, the programme does not create the intensity to learn in the DL phase. There should be healthy mix of CP and DL i.e. for certain pre-identified officers, BASCO could be a resident programme and they would go through IASCO with DL. This would maintain the continuum and be a more efficient way of learning. The most important aspect is the study of air power. Here, again, the same monotonous list repeats itself. There is no mention of joint operations at all. Placed at Appendix 'A' is the prescribed reading material for air power by the USAF and the IAF.

Distance Learning. DL varies vastly from education by correspondence. A teaching model for distance learning requires a system (a technology) and process (a way of linking resources) that makes distance learning no different from learning in the traditional classroom. A good teacher is a facilitator and allows students to share ideas and explore. Today, the teacher has another tool in the classroom that allows students to do the same things as in the past. This new tool is hypermedia. A prime example of powerful hypermedia is the worldwide web, or in our case, the air force net. The system can be designed to be interactive/research-based. Interest can be generated by video-conferencing,

gaming, etc. The scope is limited only by bandwidth and imagination.

CONCLUSION

The IAF is beginning to have a global reach and impact. If the nation is speeding along at full throttle, so must its pillars i.e. the armed forces. The impact of not doing this would be a disaster. When all banners scream, "IAF, an aerospace power," then all the personnel, including the air warriors, must be able to decipher the meaning. If we are to progress towards our vision, we must review our ME and give it its desired importance. We must understand the difference/primacy between training and education. This paradigm shift should have been made yesterday. "**No tomorrow will repeat yesterday,**" therefore, education for the future must be envisioned. This paper is the step in the right direction, a beginning has been made.

"Mankind is passing from the primacy of the past to the primacy of expectation of vast future changes."

-Harold D. Lasswell

Appendix 'A'

PRESCRIBED READING MATERIAL FOR USAF

Basic List

Sun Tzu, *The Art of War*.

Phillip Meilinger, *10 Propositions Regarding Air Power*.

James Stokesbury, *A Short History of Air Power*.

Donald Phillips, *Lincoln on Leadership*.

Tom Wolfe, *The Right Stuff*.

James Hudson, *Hostile Skies*.

DeWitt Copp, *A Few Great Captains*.

Geoffrey Perret, *Winged Victory*.

John Sherwood, *Officers in Flight Suits*.

T.R. Fehrenbach, *This Kind of War*.

Jack Broughton, *Thud Ridge*.

Harold Moore, *We Were Soldiers Once...and Young*.

Richard Reynolds, *Heart of the Storm* .

Intermediate List

Peter Paret, *Makers of Modern Strategy*.

Tony Mason, *Air Power: A Centennial Appraisal*.

George C. Kenney, *General Kenney Reports Donald Slayton, Deke!*

Lee Kennett, *The First Air War*.

Thomas Hughes, *Over Lord*.

Robert F. Futrell, *The United States Air Force in Korea*.

Mark Clodfelter, *The Limits of Airpower*.

Richard Hallion, *Storm Over Iraq*.

Advanced List

Carl von Clausewitz, *On War*.

I.B. Holley, *Ideas and Weapons*.

James Belasco and Ralph Stayer, *Flight of the Buffalo*.

Walter McDougall, *...The Heavens and the Earth*.

Raymond H. Fredette, *The Sky on Fire*.

R.A. Overy, *Why the Allies Won*.

Phillip Meilinger, *Hoyt S. Vandenberg: The Life of a General Ulysses Sharp, Strategy for Defeat*.

James Winnefeld and Dana Johnson, *Joint Air Operations*.

Roger A. Beaumont, *Joint Military Operations*.

Michael Gordon & Bernard Trainor, *The Generals' War*.

John Warden, *The Air Campaign*.

PRESCRIBED READING MATERIAL FOR IAF

Campaign Studies

- Battle of Britain.

- German Campaign of Crete, with emphasis on Air Ops.

- Op Market Garden.
- Indo-Pak War 1965.
- The Air War in Vietnam.
- Arab-Israeli War 1967.
- Indo-Pak War 1971.
- Arab-Israeli War 1973.
- Falklands War.
- Bekka Valley Ops 1982.
- Gulf War I.
- Gulf War II.

Disclaimer

The views expressed in this academic research paper are those of the author and do not reflect the official policy or position of the Indian Air Force.



SPACE SECURITY: SOME ISSUES OF MILITARISATION AND WEAPONISATION

KAZA LALITENDRA

INTRODUCTION

For 50 years, outer space has been used for scientific endeavours, civil and commercial applications as well as for military support functions but with careful restraint of not putting weapons in space so as to not disturb the international consensus on preserving outer space as the common heritage of mankind. Recent technological advances like the placement of a laser weapon onboard a Boeing 747 by the US and increasing integration of outer space capabilities in security and war-fighting doctrines have changed the nature of warfare as well as security perceptions, signalling the dawn of a new era of leveraging space superiority. The far-reaching military, economic and political ramifications of this impending transformation in the use of space are yet to be fully appreciated and factored into the future political strategies and security and defence doctrines of individual nations. The withdrawal of the US from the Anti-Ballistic Missile (ABM) Treaty in June 2002, the US Space Vision 2020, the US attempts for a space-based interceptor test-bed as part of its national missile defence, the US space policy of October 2006 and the Chinese anti-satellite (ASAT) test in January 2007, have generated fresh debate on the need for preserving outer space as the common heritage of mankind and not allowing any deployment of weapon systems in space. It is in the above context that a brief attempt is made to examine the issue of weaponisation vis-à-vis

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militarisation, the difficulties in defining a space weapon, and the concept of weaponisation of space.

SPACE AS A HIGH GROUND

Acquisition of the high ground for military advantage has been a perennial feature of military campaigns. For thousands of years, military tacticians have exploited the concept of ‘capturing’ or ‘keeping’ the high ground in military campaigns. Fortifications were built on high points, with walls that enabled archers to rain down deadly volleys. Hot air balloons were lofted by Napoleon and during the American Civil War to observe troop movements.¹ The initial utility of aircraft was perceived to be for high-level reconnaissance, followed by measures to deny the same. Thus, battles for control of the environment were the next logical progression. Aircraft revolutionised warfare during the 20th century, leading to “command of the air” as a key strategic concept. By extension, following the shooting down of high altitude aircraft like the U-2, the quest for safer observation went further up into space. The same principal of denial led to initial struggles for control of the environment of space and both the US and USSR conducted exercises for controlling the realm of space with nuclear and conventional devices such as ASATs. Thus, the militarisation of space took place during the 1960s with almost all the space-based military missions having been exercised during the first decade of the space age, i.e. space support (the launching of satellites and day-to-day managing of on-orbit satellites), space force enhancement (a broader mission category that includes all space operations aimed at enhancing the terrestrial military operations), space control (ensuring friendly access and denying enemy access to the medium of space and space force application (delivery of ordinance from space, the USSR’s co-orbital bombardment system). It is now evolving into weaponisation of space with actual placement of weapons planned by the US for decisive military advantage. Thus, weaponisation of space seems to be the next logical step in this endless struggle for mastering the ultimate high ground. Though the idea of placing

1. The hot air balloon is the oldest successful human carrying flying technology, dating back to its invention by Montgolfier Brothers in Annonay, France, in 1783, in Paris by Jean-Francois Pilatre de Rozier and Francis Laurent d’Arlandes.

weapons in space or using weapons through space can be found first in the 20th century fiction stories, it was not until the Cold War that this concept became a reality.

MILITARISATION VS WEAPONISATION OF SPACE

Militarisation of space in simple terms would mean use of space in support of ground/sea and air operations of the armed forces and refers to developing assets to be based in space with supporting ground infrastructure for military uses such as early warning, communications, command and control, position navigation and timing (PNT) and monitoring [remote sensing, and national technical means (NTM) that can be used for verification purposes and for surveillance and intelligence purposes]. It helps improve military command, control and communications, strategic and battlefield surveillance, and weapons targeting. (The legitimacy for use of satellites for military purposes has come in the aftermath of the Cuban missile crisis in 1962 where both the then superpowers agreed on the use of observation satellites for promoting international security and reducing the risk of accidental war and preemptive strikes).² Further, unlike the 1959 Antarctic Treaty which requires activities on that continent to be “exclusively for peaceful purposes,” the Outer Space Treaty (OST) 1967, under a combination of Article I and Article IV permits that “space is free for exploration and use by all States, except for placement of weapons in space.” Hence ‘peaceful purposes’ as the term has evolved over the years has come to be understood as non-aggressive means or permitting space to be used for military support functions.

The states party to the OST accept that ‘peaceful purposes’ include military use, even that which is not particularly peaceful [as in the case of using JDAMs (joint direct attack munitions) for targeting, guided by a feed from global positioning system (GPS) satellites], and space is considered a sanctuary only in so far that no weapons are deployed there. The US now feels that the time has come to act under the provisions of Article 51 of the UN Charter, which implies,

2. Pat Norris, *Spies in the Sky, Surveillance Satellites in War and Peace* (Chichester, UK: Praxis Publishing Ltd, 2008), ch.3, p.49.

Although currently there may be no weapon as such stationed in space, there are numerous components of weapon systems each of which forms a vital element in modern war-fighting.

“A state could also use military force to defend itself against hostile actions.” This, when coupled with Article III of the OST which states, *“International law and the UN Charter extends to the exploration and use of Outer Space”* ensures that a state can undertake space control and space force application missions to protect its assets in space.

The use of satellites for force enhancement of military operations has been unquestionably demonstrated in the last decade and a half in various operations like Operation Desert Storm (Kuwait, Iraq 1991), Operation Allied Force (Kosovo, 1999), Operation Enduring Freedom (Afghanistan, 2002) and Operation Iraqi Freedom in 2003. With increasing dependence on satellites for conduct of military terrestrial operations, the US concern for their safety has been echoed in its Vision 2020³ and the US space policy⁴. Not surprisingly, therefore, Washington is keen to progress from space force enhancement to space control and ultimately to space force application which envisions weaponisation of space.

Although currently there may be no weapon as such stationed in space, there are numerous components of weapon systems each of which forms a vital element in modern war-fighting. For example, in a typical battle situation, the US military now relies on space-based weather prediction systems (the Defence Meteorological Support Programme), military communications satellites (MILSTAR - to communicate from command centres and between troops), espionage and surveillance satellites (to intercept communications by an adversary and collect images of troop movements and weapon placements), early warning satellites (to provide information on missile launches) and military GPS satellites to allow troops and vehicles to navigate quickly and

3. US Space Command Vision 2020,p.10 < <http://www.fas.org/spp/military/docops/usspac/visbook.pdf> > Accessed on September 22, 2007.

4. US Space Policy 2006 p1< http://www.au.af.mil/au/awc/awcgate/whitehouse/ostp_space_policy06.pdf> Accessed on September 22, 2007.

accurately identify targets and guide 'smart' bombs and unmanned aerial vehicles (UAVs).

During Operation Iraqi Freedom, the US deployed 6,600 GPS guided munitions and over 100,000 precision lightweight GPS receivers in Iraq and used 10 times the satellite capacity employed in the Gulf War of 1991. Nine days before the start of the war, a new defence satellite communications system was installed to interconnect US military forces on land, sea and air with the Pentagon, the White House, the State Department and the US Space Command. Over 100 military satellites supported the US and UK war effort; 27 GPS satellites were available to help determine the exact location of special operations teams and of targets; and around 24 communications satellites for command and control and to give warning of a missile attack. There were also weather forecasting, TV and other systems in operation.⁵ A February 2000 flight of the space shuttle *Endeavor* was used to produce a 3-D radar map of targets in Iraq. The human resources available were also extensive—Director of Space Operations Maj. Gen. Judd Blaisdel estimated that at that time 33,600 people at 36 sites around the world were involved in space-war activities.⁶

During Operation Iraqi Freedom, the US deployed 6,600 GPS guided munitions and over 100,000 precision lightweight GPS receivers in Iraq and used 10 times the satellite capacity employed in the Gulf War of 1991.

From the above, it can be seen that the military use of space is rapidly increasing. Of the 870-odd active satellites in space today, the US has more than half of them. Russia and China have 89 and 35 satellites respectively.⁷ India has 19 imaging, communication and other satellites suitable for military use (but underutilised by the armed forces) and Israel has military satellites and has plans for new communications, imaging and radar satellites and is considering a system that would allow launch on demand

5. David Webb, "On the Definition of a Space Weapon (When is a Space Weapon Not a Space Weapon?)," Praxis Centre, Leeds Metropolitan University <http://praxis.leedsmet.ac.uk/praxis/documents/space_weapons.pdf>

6. Ibid.

7. Union of Concerned Scientists Satellite Database 09/0108 version, http://www.ucsusa.org/satellite_database. Accessed on January 15, 2008.

of small satellites from fighter aircraft. Other countries such as Brazil, Japan, and Ukraine have military space capability or potential, Australia has a dual use military-commercial communications satellite. Iran launched its first satellite with Russian help in October 2005 and recently inaugurated its space centre by launching a sounding rocket on February 4, 2008, and plans the launch of its first indigenously made satellite (Omid) from within Iran by June 2008. In Europe, the UK, France and Italy make extensive use of military satellites for imaging and communications.

Many of these programmes are dual use ones - i.e. a mixture of commercial and military projects. This has obvious cost advantages to both parties and can also help to mask or deflect interest away from some covert military activities and this increasing grey area can make it more difficult to identify the extent and purpose of military space activity. However, the military reliance on space for command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) is well established. While it provides enormous benefits, it also has the serious disadvantage that satellite systems are extremely vulnerable to attack from ASAT weapons. Thus, it can be seen that space has been militarised since the last five decades except for placing of weapons in space.

ROAD TO WEAPONISATION

In the past half-century, no weapons have been used against space objects in a deep crisis (Cuba 1962) or even in warfare, even though the means and the reasons for doing so were available. One reason for the restraint on the part of the then superpowers could be attributed to their reliance on satellites for keeping a check on each other's ballistic missile arsenal. However, now with increasing proliferation of satellites into the military doctrines of the US, Russia and China, to cite a few examples, a prospective opponent will understandably view any space capability contributing to the opposing military as part of the forces arrayed against it in a theatre. When the space capabilities represent an easier target than the other critical nodes, one can expect interference with them and, hence, greater protection for them. The natural consequence of space integration into military activity is a more hostile environment for space.

However, the shift in US military thinking is evident from the planning and policy documents released in recent years that envision the development and deployment of anti-satellite weapons and space-based weapons. These new systems are meant to fulfill four general missions:

- Defending US satellites and ensuring US freedom of action to operate in space.
- Denying adversaries the ability to use space assets.
- Intercepting ballistic missiles using space-based interceptors.
- Attacking targets on the ground or in the air using space-based weapons.

The same have been laid down in the US space policy document released on October 6, 2006, which states, “The United States considers space capabilities — including the ground and space segments and supporting links — vital to its national interests. Consistent with this policy, the United States will: preserve its *rights, capabilities, and freedom of action in space; dissuade or deter others from either impeding those rights or developing capabilities intended to do so; take those actions necessary to protect its space capabilities; respond to interference; and deny, if necessary, adversaries the use of space capabilities hostile to US national interests.*”⁸

The policy document has evoked spontaneous criticism across the globe, notably in China and Russia, that the US is bent on charting a course towards weaponising space (whether for defensive or offensive purpose).

The policy document has evoked spontaneous criticism across the globe, notably in China and Russia, that the US is bent on charting a course towards weaponising space (whether for defensive or offensive purpose). Though Russia voiced her concern against the Chinese ASAT test conducted in January 2007, she attributed the test as the Chinese reaction to the US space policy that aims to set in motion a chain of action-reaction events that may eventually lead to arming the heavens in the near future.

8. US Space Policy 2006 < http://www.au.af.mil/au/awc/awcgate/whitehouse/ostp_space_policy06.pdf> Accessed on September 22, 2007.

WEAPONISATION OF SPACE

For many in India, militarisation and weaponisation are synonymous and, hence, one can attribute the present state of Indian militarisation of space to this fact. Reacting to the need of the Indian Air Force (IAF) for an Aerospace Command likely to be set up at Akkulam, in Tiruvanathapuram, the then External Affairs Minister, Pranab Mukherjee, stated at the inauguration of the international seminar hosted by the IAF as part of its Platinum Jubilee celebrations on February 5, 2007, "There is merit in asking for the creation of separate institutions to oversee the assets that take warfare into space... it does not mean that India will go back on international commitments and weaponise space-based assets. Recent developments have shown that we are treading a thin line between current defence related uses of space and its actual weaponisation."⁹ While the reaction of the former defence minister underscores the fine line separating the issue of militarisation and weaponisation, the same cannot be said of the Chairman of the Indian Space Research Organisation (ISRO) Madhavan Nair. Reacting to the Chinese ASAT test of January 11, 2007, and on the possibility of India doing an encore, he said the country was "against militarising space." These statements only underline the fact that there is still a lot of ground to be covered in India on dispelling the myth about militarisation and weaponisation being synonymous. However, for the world at large, the common understanding has been that weaponisation is a sub-set of militarisation and there is but a subtle difference between the two. If one envisions a continuum running from space systems being used for civil purposes to satellites providing services to support terrestrial military operations to satellites being integral parts of terrestrial weapon systems, to weapons themselves being deployed in space, weaponisation occurs when the upper range of the spectrum is reached. At its most extreme, space weaponisation would include the deployment in quantity of a full range of space weapons, including satellite-based systems for ballistic missile defence (BMD), space-based anti-satellite weapons (ASATs), and a variety of space-to-earth weapons

9. Sujan Datta, "Air Force Guns for Space Power-No Laughing Matter," *The Telegraph* (Internet Version-WWW), Monday, February 05, 2007.

(STEW), and these would play a central role in any type of military operation. These would be required to carry out the remaining two missions from space, namely, space control and space force application.

Space Control/Denial

Space control (or space dominance) mission involves protecting on-orbit assets of own and friendly countries, attacking enemy assets, and denying enemy access to space. The primary means of achieving these tasks are either launch suppression, or destroying or degrading the performance of enemy satellites. These actions can either be defensive (protecting friendly assets) or offensive (denying the enemy the benefits of space-based assets). It is more or less analogous to sea and air control/denial, both of which likewise involve ensuring friendly access and denying the same to an adversary. Viewed purely from a technical perspective, there is no difference in principle between defensive and offensive space control operations conducted in any other medium of warfare.¹⁰ It is simply a matter of technical feasibility, desirability in principle, and cost-effectiveness for the pay-off being sought. The reason for the hiatus in moving forward on the desirability of space control in the aftermath of the initial surge in the early Sixties by the US appears to be the lack of political and public consensus at home, as to whether the actual combat, as opposed to passive surveillance and other terrestrial enabling functions, should be allowed to migrate to space and, thus, violate the status of space as a weapons free sanctuary, quite apart from the more practical question of whether preparing for space combat was even needed then at that still embryonic stage of space weapons development.¹¹ This could have been partly due to the fear

The primary means of achieving these tasks are either launch suppression, or destroying or degrading the performance of enemy satellites. These actions can either be defensive (protecting friendly assets) or offensive (denying the enemy the benefits of space-based assets).

10. Benjamin S. Lambeth, *Mastering the Ultimate High Ground: Next Steps in the Military Uses of Space* (Santa Monica: RAND, 2003), p. 105.

11. Lambeth, *Ibid.*

There is no clear definition of a space weapon in the current legal regimes nor has there been a consensus on what should constitute a space weapon.

that the other superpower (USSR) may also embark on such a mission and deny any advantage to the US. However, today, the US, being an unrivalled military space power, views space control as an essential precondition to maintain information dominance. It aims to deny any advantage to a likely adversary in the near future by dominating the medium of space.

Space Force Application

Space force application envisages attacking terrestrial targets from space-based weapons which would greatly reduce the reaction time, cost of human attrition and the other associated problems of attacking strategic targets deep inside enemy territory. The idea of having satellites/space planes orbiting overhead, awaiting a signal to rain down weapons on any nation at the pleasure of the US has alarmed many nations. The “Rods from God” being developed by the US¹² is an example of force application from space. Sceptics of weaponisation, more notably China, have argued that all these missions are possible from ground/sea and air-based operations and view the US drive as a move to assert its hegemony on the emerging players in the medium of space.

WHAT IS A SPACE WEAPON?

There is no clear definition of a space weapon in the current legal regimes nor has there been a consensus on what should constitute a space weapon. The debate over the definition encompasses the problems of whether or not the international community should define the weapon based on its position i.e. on land, sea, air or in space, or based on its intended target. Hence, there is a possibility for space to space, space to earth, earth to space, and earth to earth

12. Michael Goldfarb, “The Rods from God: Are Kinetic-Energy Weapons the Future of Space Warfare?” *The Weekly Standard* <http://www.weeklystandard.com/Content/Public/Articles/000/000/005/700oklkt.asp> <http://www.weeklystandard.com/Content/Public/Articles/000/000/005/700oklkt.asp?pg=>> Accessed on October 10, 2007.

(through space) weapon. Different technologies could be employed to destroy, disrupt or damage the intended targets. These could be kinetic kill vehicles that destroy by impact (the Chinese ASAT) or “Rods from God”— a proposal to fire tungsten rods from space to ground-based targets, missiles with conventional warheads, killer satellites, directed energy weapons, etc.

The advantages and disadvantages of various weapon systems which could be classified as space weapons are tabulated below:

	Principle	Advantage	Disadvantage/Problems	Warning Time
DEW	Laser	Direct effects	Energy; Line of sight, atmosphere; Counter-measures	Seconds to minutes
	Microwaves	Invisible	Low resolution; Counter-measures	Seconds to minutes
	Particle beams; X-Rays	Invisible, fast	Propagation; Energy production	Seconds to minutes
KEW	Homing missiles/ kill vehicles Collision devices	High closing speed Hard to identify	Acceleration of the collision -mass; homing Space debris multiplication,	Minutes/ hours/days Minutes/ hours
	EM guns	High closing speed	Energy; Technical problems	Minutes
Nuclear	Nuclear weapons	Lethality, destruction radii	Destroys own satellites	Seconds

Further, the micro/nano/pico satellites being designed in a defensive role as bodyguard satellites or for close proximity operations with the host satellites also have a dual role, in that they can be used as space weapons: to destroy adversaries’ satellites through kinetic kill or disrupt the use of satellite by spraying paint on the solar panels, view finders, etc. Before attempting to define space weapons, it would be pertinent to peep into history and learn about the key area of anti-satellite weapons, as the symbol and substance of militarisation and weaponisation which has existed almost since the advent of the space age.

The first operational non-nuclear ASAT system was developed in the late 1960s and early 1970s.**RUSSIAN ASATS**

The USSR developed a wide range of ASAT capabilities, including direct-ascent launchers armed with both nuclear and conventional warheads, co-orbital anti-satellite systems, and laser systems. The current status of these

systems is uncertain. Many of them involved facilities in the Central Asian states (especially Kazakhstan and Tajikistan). The crudest system involved the long-range Galosh anti-missile missile, first deployed around Moscow in the late 1960s and upgraded through the 1970s and 1980s as the exo-atmospheric intercept component of the ABM system built to protect the national command authority. It carried a 3.5 megaton nuclear warhead, which would have indiscriminately destroyed all low earth orbit (LEO) satellites passing over the Moscow region. The deployment of Gorgon (SH-11 or ABM-4) exo-atmospheric missiles began in 1983-84 to replace the Galosh system. Thirty-six of them remain operational around Moscow, carrying one megaton warheads. With a range of 350 km, they are capable of intercepting very low altitude satellites passing over the Moscow region. Other Gorgon interceptor missiles may be operational at the Sary Shagan ABM test range in Kazakhstan¹³.

The first operational non-nuclear ASAT system was developed in the late 1960s and early 1970s. It involved a co-orbital ASAT system, using an SL-11 launch vehicle carrying a radar sensor and a pellet-type warhead; the missile was launched when the target satellite passed over the launch site and within one or two orbits (90-200 minutes) was manoeuvred to within a kilometre of the target satellite and the warhead detonated. It was able to reach satellites at altitudes between 230 km to 1,000 km. It was tested about 20 times from 1963 to 1972, including seven interceptions with target satellites and five detonations.¹⁴

Testing of a new co-orbital system began in 1976. It used optical and infrared sensor systems instead of onboard radar, and had a target envelope extending

13. Laura Greg, *A History of Anti-Satellite Weapons Programs* (Union of Concerned Scientists) < http://www.ucsusa.org/global_security/space_weapons/a-history-of-asat-programs.html> Accessed on September 21, 2007.

14. Detailed information about the testing programme for the Soviet/Russian Co-Orbital ASAT programme can be found in the article by Anatoly Zach "Anti-Satellite System" on < <http://www.russianspaceweb.com/> > Accessed on September 21, 2007.

from 160 km to 1,600 km, enabling the interceptor to usually manoeuvre to its target in a single orbit. It was tested about once a year from 1978 to 1982.¹⁵ The system was declared operational in 1979. The launch site was at the Tyuratam (Baikonur) space complex in Kazakhstan, which had two launch pads and storage space for many interceptors; the system was reportedly modernised in 1991, but there have been no flight tests since 1982, and the system is probably no longer functional.

High-power laser systems became operational at Sary Shagan, near Lake Balkhash, in the mid-1970s. On five occasions in October-November 1975, a defence support (DSP) missile launch detection/early warning satellite of the US (controlled from Nurrungar in south Australia) was blinded by intense illumination from within the Soviet Union. In 1976, a new KH-11 imaging satellite was 'painted' and 'permanently damaged' by a Soviet laser. The Sary Shagan facility illuminated the Challenger shuttle on October 10, 1984, causing malfunction of onboard equipment and discomfort and temporary blindness of the crew. Two high-power lasers systems (using a ruby laser and a pulsed carbon-dioxide laser) were operational at Sary Shagan in 1987. By the time the Soviet Union collapsed, eight laser facilities had been constructed or were under construction for ASAT purposes, including a free-electron laser (FEL) prototype ASAT facility at Storozhevaya in the North Caucasus and the Sary Shagan complex. Three of them were situated in Tajikistan — at Nurek, Dushanbe and an unidentified site between these two places. The Soviet Union also experimented with a space-based laser for ASAT use. In 1987, it launched a Skif-DM satellite intended for perfecting the design and onboard systems of a future military space complex with laser weapons, but the satellite failed to reach orbit, and no further launches were attempted.¹⁶

US ASATS

In the case of the United States, the first operational anti-satellite system also involved a direct-ascent vehicle with a nuclear warhead. It consisted of a single

15. Greg, n.13.

16. Greg, *Ibid.*

The lead programme involved the ASM-135 ASAT missile, a 3-stage air-launched miniature vehicle (ALMV). It was successfully tested on September 13, 1985.

Nike Zeus ABM missile, with a 400 kiloton warhead, code-named Mudflap, based on Kwajalein Atoll in the Western Pacific, which was operational from 1962 to 1966. It was replaced by a small number of Thor missiles based on Johnston Island, two of which were maintained on 24-hour alert, from 1966 to 1972. In July 1982, President Ronald Reagan announced a "National Space Policy", a "key

element" of which was to develop "an anti-satellite (ASAT) capability, with operational deployment as soon as possible." The lead programme involved the ASM-135 ASAT missile, a 3-stage air-launched miniature vehicle (ALMV). It was successfully tested on September 13, 1985 against an old US scientific satellite (P78-1 Sol Wind), using a modified F-15 Eagle as the launch platform. In December 1985, however, Congress imposed a ban on further testing of the ALMV in space.¹⁷

During the Reagan Administration, the US also used lasers based in Maui and Oahu in Hawaii and San Juan Capistrano in California to blind Soviet reconnaissance satellites orbiting over US ABM test facilities. The facility in California, later moved to Cloud Croft in New Mexico, reportedly "possessed a full anti-satellite capability."

The US Army's megawatt-class MIRACL (mid-infrared advanced chemical laser) facility at the White Sands missile range in New Mexico was tested in an ASAT capacity in October 1997. A low powered laser (30 watts) was fired at an air force MTSI-3 satellite orbiting 300 miles above the earth, and the satellite was temporarily blinded.¹⁸

During the 1990s, the US Army also developed a ground-based kinetic-energy kill vehicle. Three vehicles were produced, and officials said in December 2002 that, with two test flights, the system could be deployed operationally within three years. However, no tests were funded, and two of the three kill

17. Dwayne Day, "Blunt Arrows: Limited Utility of ASATs," *Space Review*, June 6, 2006, <<http://www.thespacereview.com/article/388/1>> Accessed on October 1, 2007.

18. Lambeth, n.10, ch.5, p.102.

vehicles that had been built have been dismantled for use in other projects.¹⁹

OST AND ASATS

The Outer Space Treaty (OST) with respect to treating outer space as a common heritage of mankind is akin to a barbed wire fence. It attempts to protect the property (space) without obstructing the view (exploitation by the superpowers for militarising and weaponising space). It is pertinent to note that even after the ratification of the OST in 1967, and the ABM Treaty in 1972, both the superpowers continued to undertake the testing and development of ASAT weapons in their many variants. While OST and ABM Treaty prohibited the stationing of weapons of mass destruction (WMD) in space, along with the development, testing and deployment of space-based ABM systems and components in space, there are no limits on non-nuclear tests in space or tests against space targets from ground, sea or air. The OST was also silent on the definition of space weapons. Hence, in strict definitional terms, none of the existing ASATs could be called space weapons. The ASATs were permitted, if one were to analyse Paragraph 1 of Article IV of the OST which implies that objects carrying nuclear weapons or any other kinds of WMD can freely *transit* outer space, as long as they do not orbit the earth. Likewise, WMD that escape the earth orbit are permitted except that *they may not be installed on celestial bodies or otherwise stationed* in outer space. Other non-nuclear/non-WMD weapons may be placed in orbit (but not on the moon or other celestial bodies) and used to attack targets in space or on the earth. The foregoing implies that whilst the rules developed by the OST are fairly comprehensive, it does not apply to the present generation of space weapons being considered. Theoretically, then, the new generation of space weapons could be developed and deployed without violating the letter of the OST.

DEFINITION OF SPACE WEAPONS

In 1991, a study carried out by the United Nations Institute for Disarmament Research (UNIDIR) proposed the following definition:²⁰

19. Greg, n. 13.

20. Webb, n. 5.

A RAND study in 2002 has defined space weapons as “things intended to cause harm that are based in space or that have an essential element based in space,” with a degree of sought after harm ranging from temporary disruption to permanent neutralisation or disruption.

“A space weapon is a device stationed in outer space (including the moon and other celestial bodies) or in earth environment to destroy, damage or otherwise interfere with the normal functioning of an object or being in outer space, or a device stationed in outer space designed to destroy, damage or otherwise interfere with the normal functioning of an object in the earth environment. *Any other device with inherent capability to be used as defined above will be considered as a space weapon.*”

The final sentence of this definition implies that even earth-based systems or even dual capability satellites be treated as space weapons.

The definition was not accepted by the international community precisely for these reasons. A RAND study in 2002 has defined space weapons as “things intended to cause harm that are based in space or that have an essential element based in space,” with a degree of sought after harm ranging from temporary disruption to permanent neutralisation or disruption.²¹ However, a tentative thinking on the definition of a space weapon was attempted by the Chinese and Russians in a paper presented to the Conference on Disarmament (CD) on May 22, 2006 (CD/1779) which defines a space weapon as “any device, based on any physical principle, specially produced or converted to eliminate, damage or disrupt normal function of objects in outer space, on the earth surface or in its air, as well as to eliminate population, components of biosphere critical to human existence or inflict damage to them except those devices needed by cosmonauts for self-defence.”²²

While the RAND study restricts itself to weapons based in space, the Chinese

21. Bob Preston, Dana J. Johnson, Sean J.A. Edwards, Michael Miller, and Calvin Shipbaugh, *Space Weapons, Earth Wars* (Santa Monica, California: RAND, MR-1209-AF, 2002) p.23.

22. < <http://www.reachingcriticalwill.org/political/cd/papers06/22mayChinaRussia2.pdf>> Accessed on October 10, 2007

and Russian definitions include weapons like earth-based ASATs or lasers just as the definition of the UNIDIR mentioned earlier suggested. The stalemate continues on defining a space weapon. Experts like Michael Krepon from the Henry L. Stimson Centre have suggested that in order to make further progress, “a code of conduct for responsible space-faring nations” may be adopted rather than getting embroiled in definitions or creating new legal regimes for preventing an arms race in outer space. However like in many international issues affecting the world like the nuclear Non-Proliferation Treaty (NPT), Fissile Material Cut-off Treaty (FMCT) or the cut on greenhouse gas emissions, the major obstacle in the path is the US which does not support any definition or new legal framework towards preventing weaponisation of space.

VULNERABILITY OF SPACE ASSETS

The most compelling reason for moving forward towards acquiring the essential elements of a space control capability by the US is that it is now unprecedentedly invested in on-orbit capabilities, both military and commercial. In other words, while American military power derives its disproportionate efficacy from its ability to leverage critical space assets, the same assets present ‘the US military’s soft ribs’ to an adversary. At present, of the 870-odd active satellites in orbit²³, more than 400 are of the US, and with billions of

At present, of the 870-odd active satellites in orbit, more than 400 are of the US, and with billions of dollars invested in space by more than 50 countries, space has undisputedly become an economic centre of gravity.

dollars invested in space by more than 50 countries, space has undisputedly become an economic centre of gravity. Space capabilities would in the years to come represent an easier target than other conventional critical nodes; hence, we should expect interference with them. While space power is crucial to the unprecedented military capability the US now enjoys, the space-based infrastructure is its nervous system. The muscle is in its air, land and sea forces

23. n.14.

and will remain there for many years to come. Supporting these forces is the first mission of the US military space programme.

It is with this logic that concern for US space-based assets was expressed in the Space Commission's finding that the US is an attractive candidate for a virtual "Space Pearl Harbour"²⁴. At its extreme, the greatest threat in the near term would be a large number of US and allied satellites being debilitated/destroyed by a major electro-magnetic pulse (EMP) or nuclear detonation in space by hostile forces. However, the theory of such an attack by nation states can be debunked if one goes by the experiences of the US on the effects of such experiments on satellites. In July 1962, as part of Project Starfish Prime, the US detonated a 1.4 megaton thermonuclear weapon over Johnston Island in the Pacific Ocean at an altitude of 250 miles to test the effects of EMP on radio communications and radar.²⁵ That event set off burglar alarms and burned out street lights in Oahu and further generated high energy electrons that were trapped by the earth's magnetic field, producing an artificial radiation belt that damaged weather and observation satellites and destroyed seven satellites in seven months. However, the same cannot be said of the non-state actors like Osama bin Laden who might be lured towards this exotic toy called the "EMP gun from space" and not think twice about using it on his avowed enemy, with scant regard for the international ramifications that might occur, much in the similar fashion in which he orchestrated the 9/11 attacks.

At the lower end of the spectrum, a notional Space Pearl Harbour might come in the form of interference with the US satellites by, for example, a ground-based laser attack that would either blind or dazzle US assets in space and affect the conduct of an ongoing US or allied military operation. Blinding or dazzling of satellites has also been experienced by the US in 1975 when three of their DSP satellites were intentionally illuminated by ground-based laser by the Soviets causing severe degradation in their performance. More recently, the Chinese illuminated an American satellite in August 2006²⁶ when it passed over the Chinese mainland, causing temporary blinding of the satellite.

24 Charles V. Pena and Edward I. Hudgins, *Should the United States "Weaponise" Space? Military and Commercial Implications*, Policy Analysis No. 427, March 18, 2002.

25. Lambeth, n. 10, ch.5, p.102.

26. Vago Muradian, "China Attempted to Blind US Satellite With Laser," *Defence News*, September 28, 2006 <<http://www.defencenews.com/story.php?F=2121111>> accessed on September 10, 2007.

The US is more worried over such prospects from non-state actors or from states it views to be developing clandestine nuclear weapons like Iran and North Korea as a ground-based laser ASAT provides a cheap and flexible option to either degrade, damage or destroy an adversary's satellites temporarily or permanently and, in most cases, an adversary might not be able to detect and pinpoint the cause of the damage. It is, in fact, not only the case of the US being worried over the vulnerability of its satellites—the same is applicable to all space-faring nations, including China, which conducted an ASAT test in January 2007. The vulnerability to ground stations and uplinks/downlinks can be guarded with more conventional methods akin to guarding of other important installations but the nature of threat to satellites is unique as it can come from any of the existing four mediums i.e. land, sea, air or space or even from other outer space particles/objects like man-made debris or asteroids/meteors. A recent example of the threat to US satellites emerged when the US had to manoeuvre its terra earth-observing satellite to avoid a possible collision with the debris created from the Chinese ASAT test. In another instance, the US had to move its Cloud Sat out of the way of an Iranian satellite, Sinah-1 (a 160 kg remote sensing satellite of Iran launched by Russia in October 2005), to avoid a close encounter at an average altitude of 705 km.²⁷

POTENTIAL THREAT TO SPACE ASSETS.

A 'space-based' system actually includes three parts: a ground segment [including telemetry, tracking and control (TT&C) facilities, communications earth station and/or data reception and archival facilities]; the space segment itself (artificial satellites consisting of payloads and platforms) and the radio links (uplinks/downlinks that carry commands, communication traffic, signals, telemetry and data). Launch vehicles and their associated infrastructure necessary to place artificial satellites and their upper stages into orbits for subsequent operational service are also pre-requisites for space-based systems.

Each element is vulnerable to a variety of distinct threats. The ground

27. NASA Report, "Cloud Sat was Moved to Avoid Iranian Satellite", *Space News International*, Vol. 18, issue 43, November 5, 2007, p.9.

The United States has by far the largest investment in military space assets and best exploits the military advantages satellites can provide for missions such as reconnaissance, targeting, communications and surveillance.

segments and launch infrastructures are vulnerable to conventional attacks from opposing military forces. Radio links can be jammed, spoofed or otherwise hacked based on electronic transmissions from terrestrial, trans-atmospheric or orbital sources. The space segment is vulnerable to a range of attacks, including those from terrestrially-based trans-atmospheric vehicles (military space planes) or missile interceptors with nuclear, conventional explosive or kinetic energy warheads; for terrestrial-based directed-energy weapons such as lasers; and for space-based weapons

such as space mines, missile interceptors, directed energy weapons (including neutral particle beams or lasers) and devices designed to alter the trajectory of the target, to create highly damaging debris clouds or to generate EMP.

ARGUMENTS FOR AND AGAINST WEAPONISATION

The advocates of space weaponisation, mainly in the US, rely on three assumptions:²⁸

control—that controlling space offers unrivalled military and commercial advantage on earth;

vulnerability—that reliance on space assets presents particular vulnerabilities; and

inevitability—that weapons in space follow from land, sea and air developments, and that it would be to the US advantage to be the first.

Each of these assumptions has its pros and cons which are discussed below.

Control of Space Offers Unrivalled Military and Commercial Advantage.

The politico-military establishment or the more hawkish in the present Bush

28. Acronym Report, *Space Without Weapons: Ballistic Missile Defence and the Weaponisation of Space*, The Acronym Institute < <http://www.acronym.org.uk/space/rejintro.htm> > Accessed on September 20, 2007.

Administration feels that space control and space force application are the next logical steps in the race to master the ultimate high ground as space, in the years to come, would represent a critical battleground. They believe that space will necessarily be an important arena of future conflict due to the great military benefits that space weapons will provide to states that operate them. The United States has by far the largest investment in military space assets and best exploits the military advantages satellites can provide for missions such as reconnaissance, targeting, communications and surveillance. This military utility of satellites has naturally led to a desire on the part of the US military to preserve for itself these satellite-based capabilities and to deny them to potential adversaries. Some military missions such as boost-phase missile interceptions against large adversaries, can feasibly be conducted only from space, while the ever increasing importance of satellites for communications, targeting, and other essential military functions will make both attacking enemy satellites and defending one's own satellites a matter of leading strategic priority. In addition, as relevant technologies improve, space-to-earth weapons will become a potent military instrument.

The **opponents** to this proposition point out that space-based defences are enormously expensive and inherently ineffective. As an example, they cite that the space-based boost-phase missile defence system is intended for intercepting attacking missiles while the missile's engines are still burning. To reach attacking missiles very quickly, space-based interceptors (SBIs) must be stationed in low-altitude orbits. However, in these orbits, SBIs move rapidly with respect to the ground and cannot stay over any one location. To keep at least one interceptor within reach of a given missile launch site at all times requires many SBIs in orbit. A 2003 American Physical Society²⁹ study showed that many hundreds or thousands of SBIs would be required to provide limited global coverage against ballistic missiles and given the technology expected for the next decade, each SBI would weigh a ton or more. As a result, deploying such a system would be enormously expensive.

29. "The Missile Defence Space Test-Bed," May, 2007, <http://www.ucsusa.org/global_security/space_weapons/space-test-bed.html>Accessed on October 20, 2007.

A 2003 American Physical Society study showed that many hundreds or thousands of SBIs would be required to provide limited global coverage against ballistic missiles.

And yet even if such a system were built, it would not provide reliable defence. Even with this large system, only one or two SBIs would be able to reach a given launching missile in time to destroy it. The orbit of these SBIs would be low altitude and predictable, leaving them vulnerable to attack by inexpensive, short-range missiles. By eliminating only those few relevant interceptors, an attacker could create a hole in the missile defence system, which could also be defeated by simultaneously launching multiple

missiles from one location, overwhelming the system. In short, a defence based on deploying hundreds or thousands of space-based interceptors, at enormous cost, would be defeated by a handful of enemy missiles.

Vulnerability of Space-Based Assets

The **proponents** of weaponisation who argue on this basis insist that apart from military advantage, today the US as well as other nations are increasingly dependent on space-based assets in their day-to-day life. Space has come to represent an economic centre of gravity and, hence, must be defended by basing weapons in space as that will decrease the sensor to shooter time and protect these critical assets from attack from all mediums. Their idea of weapons systems include the defensive satellites, often called bodyguard satellites, as a means of protecting high-value satellites by acting as a weapon themselves to destroy or disable the attacking ASAT weapon, space mines, etc.

The **opponents** of the theory argue that an adversary willing to cause harm to the US need not go to the extent of developing such a vast infrastructure so as to launch an ASAT weapon into space but can attack its ground infrastructure for which the existing conventional defences would suffice. Further, satellites are intrinsically vulnerable, and defending them from a determined adversary is difficult. Satellites are readily observable and travel on predictable paths, so their future position can be readily calculated. Most satellites pass over much of the

earth repeatedly, giving an adversary multiple opportunities to attack and no amount of counter-measures can guarantee 100 per cent protection.³⁰ Instead, they propose that more peaceful and non-debris causing methods like temporary or reversible methods like jamming or laser attack of the adversary's satellites can be resorted to rather than the more aggressive and debris causing methods in the form of bodyguard satellites.

The Inevitability Syndrome

The proponents of this theory draw their inspiration from history; for them, weaponisation of space is inevitable and this belief comes from the analogies drawn from the advent of sea power and air power.³¹ The initial use of the media of water and air has been to aid mankind in economic progress and shrinking of the time distance horizon. However, the economic progress made through trade brought in the spectre of piracy on the high seas, which led to armed escorts for merchant ships, leading to weaponisation of ships at sea. In the case of aircraft, they were initially used for surveillance and reconnaissance and progressed to bombing from the air in World War I. Since history repeats itself, the same is going to have to be true of space. If space were to be weaponised, they feel that US should be the first one to deploy as the state to deploy space weapons will have a great, and perhaps insurmountable, advantage over its rivals.³²

The opposition to this stems from the following facts of history:

— In spite of the intuitive similarities between sea-faring and space-faring, there is one fundamental difference between them which makes the sea-space analogy very weak: ships primarily transport goods and people, while spacecraft (with only minor exceptions) are built to collect, relay, or transmit information. This means that space piracy is not a problem, so space navies are not required to suppress it, while 'commerce raiding' threats to space systems can be ameliorated by building redundant, distributed systems of

30. "Weaponising Space: Is Current US Policy Protecting Our Security?" Testimony by Laura Greg, UCS staff scientist, before the Subcommittee on National Security and Foreign Affairs of the Committee on Oversight and Government Reform, May 23, 2007 < http://www.ucsus.org/global_security/space_weapons/testimony-on-space-security.html > Accessed on September 20, 2007.

31. Karl P. Mueller, *Totem and Taboo: Depolarising the Space Weaponisation Debate* (RAND, May 8, 2002).

32. Mueller, *Ibid.*

satellites; for merchant shipping, this is obviously not an option.

— The evolution of air and space power has not been as similar as space weapons advocates' analogies often suggest. For example, less than a decade elapsed between the Wright Brothers' first flight and the first aerial combat missions, while in the fifth decade after Sputnik, space remains un-weaponised. Naturally, it would be foolish to conclude from the history of the last 50 years that space will definitely not be weaponised during the next 50, but it would also be reckless to deduce the opposite from the history of flight between 1903 and 1915.

— As regards the race to be the first to weaponise, history is replete with incidents of how the military or technological advantage enjoyed by the first country is quickly eroded by an adversary acquiring a similar weapon or finding a defence to it. The history of nuclear weapons, ASATs and ballistic missiles are some of the examples which caused an offence-defence spiral between the then superpowers and a lot of legal regimes had to be put in place to ensure that the world would be a safer place to live in for the coming generations.

The opponents to the inevitability theory also bring out the case of nuclear weapons. Nuclear weapons were deployed in each of these environments by all the major nuclear powers more or less as soon as each was capable of doing so. Yet, not only has this failed to happen in space, but those who make the analogical argument for the inevitability of space weaponisation routinely fail to insist that the nuclearisation of space will occur in the future, raising doubts about the extent to which even its supporters truly believe in this argument.³³

THE ROAD AHEAD

Of the comity of nations that are considered to have credible space assets, only the United States possesses the wherewithal (economic and scientific) to start the weaponisation of space. Though Russia has tested co-orbital weapons in the past, its present economic state precludes it from entering the weaponisation race. Russia feels that against the US, its arsenal of nuclear and ballistic missiles

33. Ibid.

will act as a deterrent. With the ASAT test in January 2007, China has demonstrated its limited ability to take war into space if required but its space programme to put weapons into space is still nascent. Further, the US space policy put out by the Bush Administration in October 2006³⁴ implies a hidden threat to any adversary if provoked weaponisation of space becomes inevitable. The approach of the US has been on developing technologies that would enable it to carry out its Vision 2020. These include:

—The development of advanced space architecture through various DARPA (Defence Advanced Research Projects Agency) projects like:

- The orbital express automated refuelling programme,³⁵
- The front end robotics enabling near-term demonstration (FRIEND).³⁶

— The near field infrared experiment satellite (N-FIRE) whose primary mission is to collect high and low resolution images of a boosting rocket to improve understanding of missile exhaust 'plume' observations and plume-to-rocket body discrimination during three plume signature types: targets of opportunity, dedicated missile fly-bys and ground observations.

— The future, fast, flexible, fractionated, free-flying space craft (F-6) space programme, and the tiny, independent, coordinating, spacecraft (TICS) programme.

More dual purpose systems under development which can be used for defensive as well as offensive use are listed below: ³⁷

— The space-based infrared system (to provide early warning for ballistic missile launches and overall missile detection capabilities).

— The space-based test-bed for testing ballistic missile interceptors in space.

— The likely revival of "Rods from Gods" weapon which envisages a space plane to be used as a co-orbital weapon loaded with tungsten rods which can be delivered onto a ground target and destroy it with kinetic effect.

— The airborne laser being developed to destroy ballistic missiles in flight can

34. n.15.

35. Rick Smith. "Look Ma, No Hands, No Humans," *Space Daily*, March 6, 2007 < http://www.spacedaily.com/reports/Look_Ma_No_Hands_No_Humans_999.html> Accessed on October 25, 2007.

36. Tactical Technology Office of DARPA < <http://www.darpa.mil/tto/programs/frend.htm>> Accessed on October 25, 2007.

37. Space Security Update#10, November 1, 2007 "Washington Moves Toward's Revamping Space Architecture," < <http://www.cdi.org/friendlyversion/printversion.cfm?documentID=4132> > Accessed on November 10, 2007.

These programmes have only enhanced the speculation that though the US claims that it is not for weaponising space, the R&D towards space-based architecture is proving otherwise. A lot depends on the post-Bush mindset of the powers that are going to be at the helm of affairs in the US.

also be used against LEO satellites.

These programmes have only enhanced the speculation that though the US claims that it is not for weaponising space, the research and development (R&D) towards space-based architecture is proving otherwise. However, a lot depends on the post-Bush mindset of the powers that are going to be at the helm of affairs in the US. Irrespective of who gets elected to the White House in 2008, the US as a nation faces one possible policy dilemma. As the world's leading democratic country, its leadership is bound by an understandable obligation to do everything reasonable to maintain the moral high ground. Yet the leadership cannot afford to

remain so passive as to allow itself to be caught by a "Space Pearl Harbour" surprise. An important question thus entails whether proceeding to lay down at least the essential wherewithal for moving, as need be, to weaponise space would risk incurring fewer downside consequences than waiting until later³⁸.

The US has been very categorical in its space policy that "the United States will oppose the development of new legal regimes or other restrictions that seek to prohibit or limit US access to, or use of, space. Proposed arms control agreements or restrictions must not impair the rights of the United States to conduct research, development, testing, and operations or other activities in space for US national interests."³⁹ Its reluctance to discuss or enable a discussion on the Prevention of Arms Race in Outer Space (PAROS) is evident in the fact that it has abstained every year from voting on a consensus on preventing an arms race in outer space and in 2005 voted against it, for the first time reasoning that there is no need to address a "non-existent threat"⁴⁰. In fact, it feels that there are more pressing issues to be

38. Lambeth, n.10, p.105.

39. n.8.

40. Prevention of Arms Race in Outer Space(PAROS) at the United Nations, January 21, 2007 <<http://www.reachingcriticalwill.org/legal/paros/parosindex.html>. Accessed on October 10,2007.

addressed like the FMCT and NPT than PAROS and has linked any discussion on PAROS with that of the FMCT and NPT, creating a deadlock in making any headway on preventing an arms race in outer space.

Analysts feel that any US space weaponisation that occurs, whether reactive or preemptive, will mostly be threat driven rather than as a result of prior unprovoked choice. However, most would agree that space weaponisation is not inevitable in the near term. Indeed, there is no observable evidence to suggest that military use of outer space will be substantially different in 2020-25 than it is today, at least regarding the development and fielding of new technologies and systems that would broaden the use of our on-orbit assets from force enhancement to force application—unless some unforeseen trigger event occurred to provoke it. The Chinese ASAT test of January 2007 can be considered one such event to provide fodder for the hawks in the Bush regime to ‘step on the gas’ in this regard.

Yet, to say that space weaponisation is not round the corner is scarcely to say that it is out of the question altogether. As senior Col. Yao Yunzhu, one of the Chinese military’s most thoughtful officers on nuclear and strategic issues, recently stated at a World Economy Forum dinner, “My wish is we really want to keep space as a peaceful place for human beings...But personally I am pessimistic about it... My prediction: outer space is going to be weaponised in our lifetime.”⁴¹ In a reflection of what might be called space weaponisation fatalism, Gen. Estes observed that “some day in the not so distant future, space will have evolved to the point where the movement of terrestrial forces will be accomplished only at the pleasure of space forces, much in the same way that the movement of land and sea forces today can only be at the pleasure of air forces. By this logic, the eventual weaponisation of space is only a matter of time—albeit a span of time that, at least to a degree, is within the power of the US to control by its near term conduct and by the

Indeed, there is no observable evidence to suggest that military use of outer space will be substantially different in 2020-25 than it is today.

41. Ashley J. Tellis “China’s Military Space Strategy,” *Survival*, vol. 49, issue 3, pp.41-72, September 2007.

character and pacing of its eventual actions.”⁴²

CONCLUSION

US plans of a space-based interceptor test-bed; its space policy and the Chinese ASAT test have started an action- reaction process in the race to weaponisation of space. With this, the future of space is nearing a crossroads: will the 50-year tradition of international cooperation and space sanctuary prevail; or, will the fear of military and/or economic domination drive nations to compete aggressively for primacy in the ultimate high ground is the question that needs to be debated in the near future. Further, with the dual use capability of most intelligence, surveillance, reconnaissance (ISR) satellites and the rapid commercialisation of space, it would be more prudent for nations to migrate more of the dedicated military missions onto the commercial satellites in order to decrease dependence on a handful of dedicated military satellites and thus obviate the need for space-based weapons to protect key satellites.

A non-state actor would at best be able to destroy one or two satellites in LEO, and an adversary state having established launch facilities may be able to destroy double the number (provided it knows with certainty which satellites it wants to knock out) before retaliatory action is initiated. The states attempting to destroy an adversary’s space assets are also fully aware of the debris effect on their space assets and this in itself would act as a deterrent for weaponising space, or attacking other nations’ space-based assets.

The need of the hour for the international community is to find ways to prevent weaponisation of space by engaging in meaningful dialogue and assuring each other that there is no threat to each other’s space-based assets. The states can aim to enhance collective security of their space-based assets from a non-state actor by increasing their space situational awareness and sharing of information. Further, each individual state can undertake passive defence of its satellites in the form of:

—Hardening of all future satellites against limited kinetic kill and EMP.

Though this may increase the cost of launching the satellite into space, nations

42. Lambeth, n.10, p.120.

that are yet to master the technology of micro/nano/pico satellites will have to bear the burden of increased cost/launch rather than forgo an important satellite to an EMP or to a kinetic hit.

— Building system redundancy by ensuring that there are back-up systems for the majority of the tasks or having some reserve capacity on commercial satellites so that the military tasks can be transferred onto them if the need arises,

—Manoeuvring satellites from accidental collision with debris or other satellites.

These measures would mitigate the threat of an arms race in outer space and as against the international norms of treaties being inked after the weapon systems have been deployed, would ensure that a treaty is put in place to prevent the heavens being armed.

Note: The views expressed here are solely those of the author and do not represent the policies of any organisation.



INTERFACE BETWEEN CONVENTIONAL AND NUCLEAR DETERRENCE: A CASE FOR THE INDIAN SUBCONTINENT

G.D. BAKSHI

INTRODUCTION

Background: The Stability-Instability Paradox

India and Pakistan became overt nuclear powers with their series of explosions in May 1998. This was an epochal event that transformed the paradigm of global security forever. Theorists of the Kenneth Waltz school felt that nuclear symmetry would usher in an era of stability on the Indian subcontinent¹. However, just a year later, in May 1999, the two countries fought a sharp but limited conventional conflict in Kargil. The Indian armed forces carried out a partial mobilisation and Pakistan suffered a tactical defeat. The situation was defused with American mediation. Two years later, in December 2002, Pakistani terrorists attacked the Indian Parliament leading to Operation Parakram, a full scale mobilisation of the Indian armed forces for war.

Michael Kreppon and Chris Gagne² have highlighted the two opposing view points amongst nuclear theorists:

- (a) **Nuclear Optimists.** Theorists led by Kenneth Waltz aver that offsetting nuclear weapon capabilities is stabilising because they make war too costly to contemplate. It was probably based upon this Waltzian paradigm that India made the bold Lahore peace initiative in the wake of nuclear testing and overt

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1. Michael Kreppon and Chris Gagne, eds., *Nuclear Risk Reduction in South Asia* (Henry L. Stimson Centre, 2003. Published in India by Vision Books), Gagne quoted on p. 300.
2. Gagne, *Ibid.*, p. 53.

weaponisation of the subcontinent.³

- (b) **Nuclear Pessimists.** Theorists led by Scott Sagan refute this formulation. They claim that the potential dangers of nuclear weapons far outweigh any stabilising effect they may usher. The initial phase after nuclearisation is most dangerous and destabilising and serious miscalculation or accidents can occur in this period. Thus, the Indian peace initiative at Lahore received a rude jolt in Kargil.⁴

The Initial Phase Syndrome. Michael Kreppon⁵ also highlights that the most dangerous time to control escalation usually comes in the years immediately after nuclearisation of both adversaries. This initial phase has the following characteristics:

- (a) Tolerance thresholds and red lines have not been defined.
- (b) The nuclear balance is unclear.
- (c) The risk-reduction arrangements have not been implemented.

Stability-Instability Paradox

This results in what nuclear theorists call the “Stability-Instability Paradox.” Chris Gagne⁶ defines this as under:

- (a) To the extent that the military balance is stable at the level of all out nuclear war, it will become less stable at lower levels of violence.
- (b) Michael Kreppon elaborates, “Nuclear weapons can generate risk taking because they presumably provide an insurance policy against escalation.”⁷

The Pakistani Military Mindset. The prime element of danger in South Asia, is the highly subjective Pakistani military mindset. Very high levels of subjectivity and a failure to think through an option have characterised Pakistani military planning in the last half century⁸. Both in 1965 and 1971 and later in 1999, Pakistani strategists failed to factor in the probability of a strong Indian response. The dominance of the Pakistan Army in that nation’s polity,

3. Ibid., p. 54.

4. Ibid., p. 54

5. Kreppon, Ibid., p. 300.

6. Gagne, Ibid., p. 54.

7. Kreppon, Ibid., p. 300.

8. Brian Cloughly, *A History of the Pakistan Army* (New Delhi: Reprint by Lancer Publishers, 1998).

unfortunately stifles any objective debate and analysis, and competing view points cannot emerge in any psychophantic hierarchy. Pakistan's post-nuclear belligerence and brinkmanship, however, could easily have been anticipated. Almost two decades before nuclearisation, Pakistani military officers had confided to Stephen P. Cohen that acquisition of nuclear capability would totally negate the Indian conventional superiority⁹. Islamic nuclear doctrines spoke of striking terror into the hearts of enemies. They theorised that the Indians would be so terrified of a nuclear holocaust that they would not dare to exercise a conventional military response to Pakistani provocations. *Ergo sum*, this would give Pakistan a free hand to settle the Kashmir dispute by an intensification of the proxy war at the sub-conventional or low intensity conflict (LIC) level. This Pakistani mindset was further fuelled by its experience in Afghanistan where the Soviets failed to punish Pakistan for its support to the Mujahideen. Media reports indicate that the plan for the Kargil intrusions had been drawn up almost a decade earlier (when Gen. Musharaff was the commanding general of the Frontier Command Northern Area and later when he was the director general military operations). Musharaff merely executed it, the moment he was in charge (as chief of army staff—COAS). Reeta Choudhari Tremblay and Julian Schofield have speculated that the Kargil adventure was the resultant vector of a civilian-military face-off in the Pakistani polity.¹⁰

Aggravation of High Risk Orientation

What is worrisome, therefore, is this Pakistani military mindset about the correlation between nuclear and conventional deterrence in the subcontinent. As long as the Pakistani military elite is convinced that conventional war is ruled out by nuclear symmetry, it could continue to behave in a highly irresponsible and belligerent fashion. The Pakistani military elite has a very high risk orientation premised upon inordinately high levels of subjectivity. Nuclear weapons, as Kreppon highlights, can generate risk taking because they presumably provide an insurance against escalation. Nuclear weapons initially

9. Stephen. P.Cohen, *The Pakistan Army*, 2nd ed. (Oxford University Press 1998) pp. 141-168.

10. Reeta Chowdhury Tremblay and Julian Schofield, "Hybrid Governments and Pakistan: Nuclear Weapons and Conflict over Kashmir," *Aakrosh*, vol 4, no.11, April 2001, pp. 30-31.

aggravated this high risk orientation of the Pakistani military elite. This could prove to be catastrophic. There is a need, therefore, to examine the escalation dynamics in the Indian subcontinent and clearly establish the interface between nuclear and conventional deterrence.

Hypothesis

Ever since Pakistan developed its nuclear capability, it has been acting from a base line presumption that India's conventional superiority has been totally negated by the nuclear symmetry. Nuclear weapons inject low order instability and encourage the Pakistani military elite to intensify the ongoing proxy war in Jammu and Kashmir (J&K). This could have catastrophic consequences. It is vital, therefore, to establish the interface between conventional and nuclear deterrence on the Indian subcontinent through precise escalation models that generate credible conventional responses to the proxy war.

EXAMINATION OF THEORETICAL ASPECTS: COERCION, COMPELLENCE AND DETERRENCE

Failure of Coercion Strategies

The behavioural aspects of a nation-state entity are guided by its historical experience. The traumatic defeat of 1971 had been a highly traumatic and sobering experience for one generation of Pakistani officers. Unfortunately, the intervention of the Central Intelligence Agency (CIA) against the USSR in Afghanistan, made Pakistan a key surrogate of the USA. The apparent "victory" of the Inter-Services Intelligence (ISI) in the Afghan War gave the Pakistani military elite a triumphalist mindset. In the low intensity conflict genre of *jihad*, they found a new foreign policy force multiplier that was especially effective in a symmetric nuclear setting that checkmated the conventional response capabilities of much stronger antagonists.¹¹ Emboldened by its Afghan experience, the Pakistani military-ISI elite went all out to destabilise India by promoting insurgency/terrorism in its key border states of Punjab and J&K. Subsequently, this *jihad*-based terrorism was

11. G.D. Bakshi, *Afghanistan: The First Fault in War* (New Delhi: Lancers Publishers, 2002) p. 80, for a fuller treatment of the impact of the Afghan War on the Pakistani military mindset and the onset of hubris and triumphalism.

sought to be spread to the Indian depth areas as far afield as Bombay, and Chennai in the south. This has amounted to an ideological-cum-sub-conventional assault upon the Indian nation-state that culminated in a highly symbolic attack on the key institution of its democratic polity, the Parliament itself.

Given the nuclear backdrop, the most prudent course for India was to coerce Pakistan into ceasing/calling off this proxy war by the threat of conventionalising the conflict. This coercive threat, however, failed to carry conviction. India experimented with a series of options short of war or what the American euphemistically call operations other than war (OOTW) to coerce Pakistan into stopping its proxy war. Pakistan's continuing intransigence in the initial phase after nuclearisation seemed to highlight the apparent lack of success or possibly only the partial success of these coercion strategies. It is, therefore, essential to examine these basic concepts in more detail.

Coercion. Daniel L. Byman and Mathew C. Waxman have defined coercion as the use of threatened force, including the limited use of actual force to back up the threat, to induce an adversary to behave differently than it otherwise would.¹²

Byman and Waxman argue that coercion can be differentiated into two distinct categories:

- (a) **Deterrence.** They define this as stopping an undesired action from occurring (e.g. the USA forcing Iraq not to invade Kuwait).
- (b) **Compellence.** Compellence is reversing an undesired action that has already taken place. (e.g. forcing Iraq to withdraw from Kuwait)¹³.

In practice, however, it is difficult to differentiate compellence from deterrence and this neat compartmentalisation may not always be feasible. Bayman and Waxman argue that coercion is a dynamic process. Even as the USA or India or any other coercer tries to shape the adversary's behaviour, so too the adversary tries to reduce the pressure imposed on it. Adversaries typically try to counter-coerce the coercer.¹⁴

Measuring Coercive Success. They point out that measuring coercive success

12. Daniel L. Byman and Mathew C. Waxman. "Confronting Iraq: US Policy and the Use of Force Since the Gulf War," National Defence Research Institute RAND-2000, Arlington USA, pp. xi. The paper is useful for its analysis of theoretical concepts against the backdrop of a live crisis situation in Iraq.

13. Byman and Waxman, *Ibid.*, p. xi.

14. *Ibid.*, p. xii.

Thus, it may be difficult to gauge the success of Operations Parakram in coercing Pakistan. The full scale Indian mobilisation did force Pakistan to publically condemn terrorism and ban the LeT/JeM and scale down support to terrorists.

is often very difficult. The same action can have both positive or negative effects, particularly when long-term ramifications are taken into account. Thus, it may be very difficult to accurately gauge the success of Operation Parakram in coercing Pakistan. The full scale Indian mobilisation for war did force Pakistan to publicly condemn terrorism and ban the Lashkar-e-Tayyeba/Jaish-e-Mohammed (LeT/JeM) and for a period, scale down its support to the terrorists. However, coercion being a dynamic process, it is difficult to sustain such effects for extended durations. Absolute binary matrices of success or failure cannot be

employed in coercion strategies. It would be essential to use the simple cost-benefit analysis model for heuristic assessments of coercive measures.¹⁵ In the absence of precise data, it may be premature to pass any value judgements on Operation Parakram. The whole standpoint of judgement changes dramatically if this mobilisation was not for coercive purposes but had an actual offensive design of compellence. It is, therefore, a matter of "intent". No details of actual intent are available in the open literature. Any value judgements or measurements of coercive success would, therefore, be premature at this stage.

Factors Effecting the Coercive Process. Bayman and Waxman have highlighted some key factors effecting the coercive process. These are:

(a) **Recognising Adversaries' Centres of Gravity**¹⁶. It is essential to identify the adversary's centres of gravity which if destroyed (or seriously degraded) would cause the enemy resistance to collapse. For Iraq, they identified the centre of gravity as "Saddam's relationship with his power base." In the end, key Republican Guard commanders were simply bribed by the CIA and Iraq's military resistance collapsed. The centre of gravity had been correctly established.

15. Ibid., p. xii.

16. Ibid., p. xviii.

- (b) **Recognising that Coercion is a Dynamic Process.**¹⁷ Coercion is not a single event (e.g. Operation Parakram). It is a dynamic and ever evolving process that must take into account the adversary's reactions and counter-measures.
- (c) **Understanding What Cannot be Affected.**¹⁸ The coercer can control the level of pain it inflicts, not the adversary's willingness to accept that pain threshold. The US found that coercing populations to revolt or adversaries to carry out a coup was extremely difficult in Iraq.
- (d) **Improving Long-Term Planning.**¹⁹ There is a need for continued "low probability-high impact analysis" and employing "Red Teams" to explore the range of possible outcomes and make policy planning more objective and realistic.
- (e) **Recognising Self-Imposed Limits.**²⁰ Lastly, it is essential to recognise the self-imposed limits and constraints generated by political or diplomatic concerns. These self-imposed limits are often far more effective in undermining coercion than any measure taken by the adversary. Thus, the decision not to cross the Line of Control (LoC) was a self-imposed limit during the Kargil War.

Risks of Coercion. The risks of coercion are identified as the "potential for backfire."²¹ Threatening an adversary could well provoke an increase in unwanted behaviour.

Communication and the Deterrence Process

The Israeli Analyst Zeev Maoz has highlighted the triad of communicability, credibility and feasibility as central to the process of deterrence.²² This is shown in diagrammatic form (Fig.1).

Communicability. The threat held out must be unambiguous and communicable. The adversary must be convinced about the existence of the threat namely:

- (a) The conditions under which it will be carried out.

17. *Ibid.*, p. xviii.

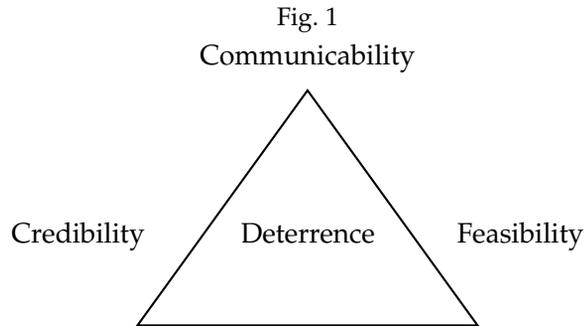
18. *Ibid.*, p. xviii.

19. *Ibid.*, p. xviii.

20. *Ibid.*, p. xviii.

21. *Ibid.*, p. xviii.

22. Zeev Maoz, *Paradoxes: On the Art of National Self-Entrapment* (Boston: Unwin Hyman, 1996) p. 32.



(b) Political, economic and military consequences of carrying out that threat.²³

Credibility. The threat must be credible. Credibility is a function of capability and intent. The political will to carry out the threat must be made clearly evident. It is as important and critical as having the military capability to execute the threat.²⁴

Feasibility. This defines the extent to which the deterring nations can respond to a given violation of the status quo. Historically, this has generally failed with low order threats to the status quo e.g. the USA in Vietnam and the USSR in Afghanistan.²⁵

Application of Theoretical Framework to the Indian Context

India's existing conventional threat/superiority has failed to deter Pakistan from challenging the status quo in Kashmir through its low cost/no cost proxy war. India, therefore, has to think of:

- (a) **Compellence Strategies.** To force Pakistan to halt and roll back its proxy war.
- (b) **Deterrence.** Deter Pakistan from escalating the proxy war beyond existing levels and from employing nuclear weapons should India chose to conventionalise the conflict in response.

Credibility

As far as the proxy war is concerned, therefore, Indian deterrence has failed in Kashmir because Pakistan has already launched its proxy war. India, therefore, has

23. Maoz, *Ibid.*, p. 33.

24. *Ibid.*, p. 33.

25. *Ibid.*, p. 34.

to adopt a compellence strategy. The reason for the failure of Indian conventional deterrence is its possible lack of credibility. Credibility is a function of capability and intent. Pravin Sawhney writes, "Few understand the reality that the conventional forces of India and Pakistan are matched or nearly matched." In all the wars fought between the two, Pakistan has never been defeated in the eastern sector by India. This explains why military officers from both sides rarely take the impending nuclear holocaust scenario painted by the scholars very seriously.²⁶ The Indian conventional forces

currently do not have the overmatching edge which could engender credibility. Pakistan is also sceptical about Indian political resolve to cross the LoC/IB (international boundary).

Pakistani Centres of Gravity. Sawhney's argument is that India cannot conventionalise the conflict because no credible and overmatching conventional capability that could yield decisive results is currently available. We must, first and foremost, acquire such a conventional edge before we threaten to press it home. The next question is: against what do we apply this conventional force? What are the Pakistani centres of gravity that if addressed could cause its collapse? These could be:

- (a) The Pakistani city complexes of Islamabad and Rawalpindi (the national capital complex, with key command and control nodes).
- (b) The Pakistani nuclear weapons and reactors and means of delivery.
- (c) The Punjabi heartland with the core cities of Lahore and Sialkot.
- (d) The port city of Karachi.
- (e) The Pakistani economy.
- (f) The Pakistani strategic reserves (Army Reserve North and Army Reserve South).

26. Pravin Sawhney, *The Defence Makeover: 10 Myths that Shape India's Image* (New Delhi: Sage Publications, 2002) p. 175.

As far as the proxy war is concerned, Indian deterrence has failed in Kashmir. India has to adopt a compellence strategy. The reason for the failure of Indian conventional deterrence is its possible lack of credibility.

- (g) On the Iraqi pattern, the relationship of Pervez Musharaff with his power base, viz. the 12 corps commanders, is also a key centre of gravity in Pakistan's case.

ESCALATION DYNAMICS: HERMAN KAHN'S THEORIES AND THEIR APPLICABILITY TO THE INDIAN CONTEXT

On Escalation

Herman Kahn is to nuclear thought what Clausewitz is to conventional warfare. Kahn's magnum opus on *Thermonuclear War* is still a standard text for strategic nuclear thought. However, Kahn's other seminal work, *On Escalation: Metaphors and Scenarios* is not as well known.²⁷ Nonetheless, it has useful inputs that suit the subcontinental context.

Escalation. Kahn cites Thomas Schelling who coined the phrase, "Escalation is a competition in risk taking."²⁸

Escalation Dominance. Escalation dominance is not mere military superiority. It is complex concept in which military calculations are only one element. It also encompasses the assurance, morale, commitment, resolve and internal discipline of both principle antagonists and their allies.²⁹

Intensifying Escalation. Herman Kahn cites the example of two nuclear armed adversaries between whom a "limited conflict" or "agreed battle" is going on. There are three possible ways in which one antagonist can escalate the conflict (i.e. increase or threaten to increase his efforts)³⁰:

- (a) **Increase the Intensity.** Increase the intensity of the ongoing conflict (by doing more of what one is already doing—perhaps send in more troops and equipment, send better equipment or attack new targets). An example would be Pakistan intensifying the proxy war by inducting shoulder fired surface-to-air missiles (SAMs)³¹ into Kashmir.
- (b) **Widening the Area: Violate Local Sanctuary.** Kahn postulates that a "local

27. Herman Kahn, *On Escalation: Metaphors and Scenarios* (London: Pall Mall Press, 1965).

28. Kahn, *Ibid.*, p. 3.

29. *Ibid.*, p.4.

30. *Ibid.*, p. 4.

31. *Ibid.*, p. 3.

sanctuary” could be violated (e.g. crossing of the Yalu river in the Korean War, retaliatory raids or bombings of North Vietnam or hot pursuit operations). This entails a permanent widening of the area of conflict or ongoing battle.³² In the subcontinental context, Pakistan Occupied Kashmir (POK) is a local sanctuary. India launching hot-pursuit operations into POK would be violating a local sanctuary.

(c) **Compounding the Escalation: Violate Central Sanctuary.** Finally, one of the

adversaries can escalate by precipitating a new crisis or conflict in an area other than the local one. Thus, the escalator could violate a “central sanctuary” or attack an ally or client of the principle opponent. In the Indian context an attack across the IB could violate a “Central Sanctuary”.³³

Nuclear Chicken: Calculated Irrationality. Kahn used the metaphor of the game of “chicken” played by teenagers for describing escalation dynamics.³⁴ He pointed out the symmetrical character of many escalation situations. Game theorists like Steve J. Brams and Kilgour have built mathematical models to calculate payoffs and probabilities of various options in the game of chicken and in deterrence situations.³⁵ During escalations, national leaders sometimes deliberately employ the tactic of “calculated irrationality”³⁶ to scare the adversary into backing off (Pretend to be highly emotive and, hence, make rational calculations unreliable for the adversary.) This raises the level of uncertainty and forces a rational actor to back down. Pakistan initially tried to play the calculated irrationality card in Kargil.

In international relations, theorises Kahn, escalation is used to facilitate negotiations or to put pressure on one side to settle a dispute without recourse

32. Ibid., p. 3.

33. Ibid., p. 3.

34. Ibid., p. 9.

35. Steve J. Brams and D. Marc Kilgour, *Game Theory and National Security* (New York: Basil Blackwill, 1988).

36. Brams and Kilgour, Ibid., p. 11.

to war.³⁷ However, Bayman and Waxman feel that escalation could involve limited use of force. This is vital in our context.

APPLICATIONS IN THE INDIAN CONTEXT

Herman Kahn's theories on escalation provide a logical framework for analysing the escalation dynamics and option matrices in the Indo-Pakistan context. As per the Kahn thesis, India's options are:

- (a) **Intensification of Counter-Terrorist (CT) Operations.** India could intensify the CT operations in J&K by inducting additional formations and employing attack helicopters, Lancer gunships and use field artillery and mortars while tackling terrorist concentrations in remote areas. So far, the design of our CT operations in J&K has been on the Afghan model, with primary emphasis on securing lines of communication and key communication centres. The intensification option implies a manifold increase in the density of the counter-terrorist grid to expand operations and tackle terrorist concentrations in remote base areas like Hilkaka.³⁸ The move of additional troops and resources for this stated aim would also set the stage for more proactive trans-LoC operations.
- (b) **Violate Local Sanctuary.** In the Indo-Pakistan context, POK constitutes the local sanctuary which has so far remained immune from Indian retaliation. Kargil provided us a major opportunity to retaliate across the LoC. However, in view of the nuclear backdrop, it was decided to confine operations to own side of the LoC. This entailed heavy casualties and time penalties but India gained great mileage internationally as a mature and responsible nuclear power. Pakistan's military regime attempted a posture of "calculated irrationality" and courted adverse international reaction. However, in retrospect, Indian restraint only emboldened the Pakistani military elite to intensify the proxy war in Kashmir and even extend terrorist violence to other states of India. The next major stand-off occurred in December 2001 with the attack on the Indian Parliament. Once again, the Indian response of a total

37. Ibid., p. 12.

38. Pravin Swami, "The Hype and the Folly," *Frontline*, July 4, 2003, p. 4.

mobilisation for war was partially successful. It forced Gen. Pervez Musharaff to denounce terrorism and ban the LeT/JeM, but over time, the credibility of the Indian threat wore off. In case of any future Pakistani provocations, India is now left with no option but to violate the local sanctuary of POK with trans-LoC operations.

- (c) **Violate Central Sanctuary.** In the Indo-Pakistan context, attacks across the IB would constitute a violation of the “central sanctuary.” In 1965, India had followed this escalation ladder. In response to Operation Gibraltar of Pakistan, it had launched a series of attacks across the ceasefire line. Pakistan had responded by Operation Grand Slam (a division sized offensive in Akhnur). In response, India had launched major corps sized offensives across the IB. The 1965 War, however, was a military stalemate because India lacked a decisive edge in conventional force ratios. Unfortunately, much the same situation of parity exists today (albeit at a much higher force level). As such, this option will not become credible till India develops an overmatching conventional capability vis-a-vis Pakistan. Analysts like Praveen Sawhney have clearly highlighted this stalemated situation.³⁹ A major conventional attack across the IB should not merely generate a stalemate but a distinctly favourable end state (severe attrition/destruction of Pakistani strategic reserves/war-making capability and a total blow to the Pakistani economy that prevents rearmament). It is this conventional parity factor (even more than the nuclear dimension) that fuelled Pakistani intransigence. Only a major rearmament programme to generate a visible conventional military edge will make a threat to conventionalise the conflict credible to Pakistan.

Escalation Ladders as Scenario Generators

Perhaps one of the most valuable contributions of Herman Kahn has been the concept of escalation ladders as scenario generators. In the 1950s, he had drawn up escalation ladders for a hypothetical conflict between the USA and USSR that highlighted the various rungs, event plateau levels and decision points where the national leadership could decide to move up or down the

39. Sawhney, n.26, p. 175.

escalation ladder based on the adversary's reactions, the international response and domestic compulsions. It is imperative that we generate a series of escalation ladder options. These will constitute the multiple war-gaming scenarios that can enable us to crystallise an effective response to the Pakistani proxy war. It is argued that escalation ladders trace the evolution of any conflict from a cold start to border skirmishes, to a limited conflict in a specific theatre that proceeds to full-fledged conventional war and the possible nuclear release as a consequence thereof. Thus, the precise interface between conventional and nuclear deterrence can best be defined by such exhaustive escalation ladders that detail each step of the graduated responses and counter moves. The escalation ladder is, therefore, a most valuable theoretical tool in our study of this uncharted territory.

RECENT DEVELOPMENTS IN MILITARY TECHNOLOGY THAT COULD GENERATE CONVENTIONAL OPTIONS IN THE SUBCONTINENT

General: Impact of the RMA

We are currently in the throes of an ongoing revolution in military affairs (RMA) that has been generated by the application of information technology to war-fighting.⁴⁰ This has resulted in:

- (a) **A Transparency Revolution.** Surveillance satellites, unmanned aerial vehicles (UAVs) and synthetic aperture radars on airborne platforms [airborne early warning (AEW) and airborne early warning and control systems (AWACS) as well as joint surveillance target attack radar system (JSTARS)] have all created a transparency revolution. This enables the attacker to look deep in the enemy rear and reduce the fog of war.⁴¹ AWACS flying deep in own territory can direct the air battle over enemy areas.
- (b) **Precision Attack.** Precision guided munitions (PGMs) like laser guided bombs, TV guided munitions, global positioning system (GPS) guidance kits on traditional gravity bombs, etc have exponentially increased the

40. Michael L. Brown in "Revolution in Military Affairs". Paper in Alan.D. Campen, ed., *Cyber Wars Security Strategy and Conflict in the Information Age* (New Delhi: Indian reprint by Book Mart Publishers, 2000).

41. Brown, *Ibid.*, p. 43.

precision and lethality of aerial attacks from altitudes well beyond the existing SAM envelope. This has led to a phenomenal increase in the lethality and effectiveness of air power which is transforming the very nature of war. It is this ability which is at the heart of the current RMA.⁴² Though the RMA is much discussed in our armed forces, we still have a long way to go before we can actualise it in our context. This RMA itself could generate for us the conventional edge that we need in the subcontinent.

US Experience: Afghanistan and Iraq. Current US military campaigns have highlighted the increasing usage of PGMs in successive campaigns:

Campaign	Percentage of PGMs Employed
(a) Op Desert Storm (Gulf War I)	10%
(b) Op Allied Force (Serbia)	35%
(c) Op Enduring Freedom (Afghanistan)	60%
(d) Op Iraqi Freedom (Gulf War-II)	70% ⁴³

Air Power-Special Forces Combine. The most significant lesson to emerge from the US campaigns in Afghanistan and Iraq has been the tremendous effectiveness of the new air power-special forces combine. Precision munitions require equally precise intelligence for effective engagements. US special forces teams equipped with TAMERs (technology advanced mini eye-safe laser range finders, a very lightweight but accurate GPS based laser range finder and target designator) could operate in the rear and paint targets for precise and lethal air attacks. It highlighted that backed by precise and responsive air power, very small ground forces could achieve results wholly disproportionate to their size.⁴⁴ These target designation binoculars and lightweight air-to-ground communications have, therefore, generated a new revolution in war-fighting which has very pertinent applications in the trans-LoC context.

42. Ibid.

43. Michel Sirak, "Flexibility Key to Weapon Mix," *Jane's Defence Weekly*, January 18, 2003, p. 45.

44. G.D. Bakshi, "End Game in Afghanistan: Military Lessons from the Campaign," *Indian Defence Review*, vol.16(4), October-December 2001, p. 63, for a fuller treatment of the enabling impact of such force multipliers on combat.

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Specific Weapon System Applications

AWACs. Catering for the Chinese frontier, the conventional ground forces of India and Pakistan are at near parity levels. The Indian Air Force (IAF) however, with its SU-30, MiG-29, MiG-27, Jaguar and Mirage aircraft has a distinct edge over the Pakistani air fleet. However, even with this current edge, our air force can achieve only local air superiority for limited durations. Iraq, Yugoslavia and Afghanistan have clearly demonstrated the war-winning potential of air superiority. For any conventional threat to be credible, the IAF must be given this decisive edge over the Pakistan Air Force (PAF). The greatest force multiplier for it would be AWACs. Media reports indicate that India is about to receive the Israeli Phalcon radar. This could be

mounted on IL-76 platforms and provide our air force with a most significant force multiplier that can usher in the RMA on the subcontinent.⁴⁵ Specific applications of the AWACs will be discussed in the proposed escalation ladders.

TAMER Class Laser Designating Binoculars. A key piece of technology that enabled US Special Forces to accurately acquire and designate targets for the US Air Force in Afghanistan and Iraq are the very lightweight TAMER designation binoculars. These were developed by the US Defence Advanced Research Projects Agency (DARPA). It uses laser beams to accurately measure distance and bearing of targets and uses GPS to instantly get their precise eight figure grid references. These enable the precision attack ability of the USAF to be optimally exploited.⁴⁶ In our case, small special forces teams equipped with TAMER binoculars could infiltrate across the LoC and accurately designate targets

45. Rahul Bedi, "Divided Interests" *Jane's Defence Weekly*, May 21, 2003, p. 22.

46. John Barry, "A New Breed of Soldiers", article in *Newsweek*, December 10, 2001, pp. 20-21.

(terrorist camps) for engagement by own air force and/or artillery of 155 mm and higher calibres. Equivalent Israeli systems are Lachross binoculars. The lethality of such special forces teams would be enhanced exponentially with this capability. Small tactical teams could, thus, have a huge strategic impact.

SMERCH Multiple Rocket Launcher System (MRLS). This 300 mm calibre Russian MRLS has a range of upto 70 km.⁴⁷ It could be used to engage terrorist training camps across the LoC as well as command and control centres like divisional and corps headquarters and launch pads for infiltration. This system is within the existing restraint envelope as both sides have been using artillery for trans-LoC engagements. Its far higher throw weight and range would constitute a new rung on the escalation ladder and clearly make a statement of intent.

Mini UAVs. The American DARPA is currently working on hand held micro UAVs, weighing between 200-500 gm, with a range of upto 10 km and endurance of up to one hour. These could be mass produced and issued down to the infantry battalion level on the LoC. These would greatly enhance transparency and permit accurate acquisition and engagement of targets in POK. The Israeli's firm Elbit Systems have produced lightweight UAVs (5.5 kg, with two hours endurance) called Skylark and Seagull.⁴⁸

Fast Attack Vehicles. These are very lightweight but high mobility vehicles for the special forces that can be inserted/extracted by helicopters. They carry two/three man crews, a machine gun, automatic grenade launcher and anti-tank missiles. They have long endurance and range (500-700 km) and power to weight ratios that are higher than those of all main battle tanks (MBTs). They have low noise and heat signatures which give them virtual stealth capabilities. Their cross-country mobility is superior to that of MBTs and infantry combat vehicles (ICVs). These could be used by our special forces in the plains/desert sectors for acquiring targets (tagging strategic reserves) and for lethal raids/ambushes deep in the enemy's rear. They could be effectively employed in the plains sector of J&K. Such enhanced capabilities with our special forces can open up a whole range of options for trans-LoC/IB raids/missions that can be employed as new

47. Nicholai Makorovets, "Multiple Rocket Launchers," *Indian Defence Review*, vol.16 (4), October-December 2001, p. 43.

48. Craig Hoyle, "Israel's Elbit System," *Jane's Defence Weekly*, June 18, 2003, p.31.

steps in the escalatory ladder that utilise smaller number of troops but have a vastly disproportionate impact. The actual employment of limited but precise and lethal violence could send a strong signal of political intent that is far more coercive than mere deployments on own side of the border. There is an urgent need, therefore, to greatly strengthen our special forces capability.⁴⁹

ESCALATION MODELS FOR CONVENTIONALISING THE CONFLICT IN THE SUBCONTINENT

Escalation Ladders: Scenario Generators

To generate various war-gaming scenarios and *define the precise relationships between conventional and nuclear war in the subcontinent, it would be essential to trace out specific escalation ladders.* These escalation ladders define the precise space between conventional and nuclear war in our context and help us to chart the steps that span the transition between these conflict modes.

Pakistani Views of Escalation

Before we design our own escalation ladders/scenarios, it would be useful to examine the Pakistani thinking on this subject. In Pakistan, the initial reaction to acquiring an overt nuclear capability was euphoric. In the wake of the Chagai explosions, Pakistani responses seemed to stem from a belief that India's conventional superiority was totally negated. During *the Kargil conflict, the Pakistani military pegged the subcontinental nuclear threshold at absurdly low levels.*⁵⁰ It was characteristic of the highly subjective modes of thought in the Pakistani military establishment. However, the strong Indian response in Kargil was highly sobering for the Pakistani generals. The traditional cautious approach of the General Headquarters (GHQ) Islamabad resurfaced soon thereafter. Would the Pakistani response to an Indian conventional attack across the LoC/IB be a spasmodic nuclear release? A study of recent Pakistani military literature now suggests that this may no longer be the case.

49. Dr Bhashyam Kasturi, "Military Special Forces in the Indian Context," *Indian Defence Review*, vol. 16(4), October-December 2001.

50. Rear Admiral K. Raja Menon, *A Nuclear Strategy for India* (New Delhi: Sage Publications, 2000), p. 197.

Pakistan's First Use Doctrine: Escalation Scenarios

Pakistan has clung to its "first use doctrine."

However, the sobriety engendered by the Kargil War is now clearly visible. Pakistani strategists are now talking of a "graduated response" as opposed to a "massive response" or spasmodic release. Thus, Lt. Gen. Sardar F.S. Lodhi of the Pakistan Army, writing in the *Defence Journal*⁵¹ clearly articulated a Pakistani view of the escalation ladder as under:

- (a) **Conditions for Nuclear Release.** "In a deteriorating military situation, when an *Indian conventional attack is likely to break through our defences or has already breached the main defence line - causing a major setback to defences which cannot be restored by conventional means* at our disposal, the government would be left with no option except to use nuclear weapons to stabilize the situation. India's superiority in conventional arms and manpower would have to be offset by nuclear weapons. Pakistan's nuclear doctrine, therefore, would essentially revolve around the first strike option."⁵²
- (b) **Graduated Escalation.** Gen Lodhi states, "This would entail a stage by stage approach in which the nuclear threat is increased at each step to deter India from attack."⁵³
- (c) **First Step.** Public or private warning.⁵⁴
- (d) **Second Step.** Demonstration explosion of a small nuclear weapon on Pakistani soil.⁵⁵

Pakistan has clung to its "first use doctrine."

According to their strategists, when a military situation deteriorates and a conventional attack is likely to break through their defences, causing a major setback, the government would be left with no option except to use nuclear weapons to stabilise the situation.

51. Lt. Gen (Retd) Sardar F.S. Lodhi, "Pakistan Nuclear Doctrine," *Pakistan Defence Journal*, April 1999.

52. Lodhi, *Ibid.*

53. *Ibid.*

54. *Ibid.*

55. *Ibid.*

- (e) **Third Step.** Use of a few nuclear weapons on its own soil against Indian conventional forces.⁵⁶
- (f) **Fourth Step.** Nuclear weapons employed against critical but purely military targets in India across the border from Pakistan, probably in thinly populated areas in the desert or semi-desert, causing less collateral damage.⁵⁷
- (g) **Counter-Value.** Some weapons would be in reserve for the counter-value role.⁵⁸

Lt. Gen. K.M. Arif has stated that both India and Pakistan are not crazy countries. If the strategy of deterrence works in other parts of the world, it is bound to work in this region as well. It is highly doubtful if either country would use nuclear weapons against each other.⁵⁹ Lt. Gen. Khalid Kidwai of the Strategic Plans Division of the Pakistan Army defined the nuclear threshold as under:

- (a) Nuclear weapons are aimed solely at India.
- (b) In case deterrence fails, they will be used under the following conditions:
 - (i) **Space Threshold.** India attacks Pakistan and conquers large parts of its territory.
 - (ii) **Military Threshold.** India destroys a large part of Pakistan's land or air forces.
 - (iii) **Economic Threshold.** India proceeds to the economic strangulation of Pakistan. This would include a naval blockade and stoppage of the Indus waters.
 - (iv) **Internal Threshold.** India pushes Pakistan into political destabilisation or creates large scale internal subversion in Pakistan.⁶⁰
- (c) **The Kidwai Thesis is Largely Academic.** Lt. Gen. Lodhi's thesis is far more specific and could well represent Pakistan's nuclear escalation options.

Analysis of Pakistani Escalation Ladder

Analysis of the Pakistani escalation ladder clearly highlights the sobering effects of Kargil. The conditionalities for nuclear release are ambiguous. They stretch

56. Ibid.

57. Ibid.

58. Ibid.

59. Lt. Gen. K.M. Arif, *Working with Zia* (Karachi: Oxford University Press), pp. 362-363.

60. Lt. Gen. Khalid Kidwai cited in Landau Report on Nuclear Safety, Nuclear Stability and Nuclear Strategy in Pakistan. Prepared by Prof P.C. Ramusino and M. Matellini.

from “breaching the main defence line to actual breach. It next graduates to a major setback which cannot be restored by conventional means.” The Pakistani nuclear threshold, therefore, has a very elastic bandwidth. The absurdity of the massive response strategy was highlighted to the USA in the Cuban missile crisis of 1962. The Kargil War has similarly forced Pakistan into a flexible response strategy. Gen. Lodhi's escalation ladder is clearly graduated. It commences with a “nuclear shot across the bow” and then graduates to a purely military use of nuclear weapons, first on its own soil and only then on ours. The anxiety to avert a devastating counter-value Indian response is clearly evident. Use against military targets in semi-desert/desert regions of low population density is also designed to mitigate international criticism and increase plausibility of such nuclear release.

This paper is excerpted from the author's thesis written at the National Defence College in 2003. Though a little dated, the theoretical frame work continues to be relevant and merits further debate and analysis. The paper is based entirely on open sources that have been cited in detail.



FALSE GOSPEL FOR AIR POWER STRATEGY? A FRESH LOOK AT GIULIO DOUHET'S "COMMAND OF THE AIR"

MICHAEL D. PIXLEY

Is Italian General Giulio Douhet's air power theory still relevant after eighty years? Further, did Douhet himself consider his theory relevant beyond Fascist Italy in the post-Great War period? As with most theorists of war, Douhet is far more often cited than studied. Thus, the context of his theory and thoughts may be somewhat surprising for those who invoke the name of Douhet for polemical purposes in an American context utterly foreign to his own assumptions. Indeed, according to his self-imposed limitations, the United States was Douhet's preferred illustration of a nation for whom his theory did not apply. As with any theory, his was hardly isolated from the time and circumstances of its formulation. Douhet's thought was so powerfully and deliberately influenced by the peculiar conditions of interwar Italy that failure to analyze this context cannot but produce a grossly distorted understanding of his airpower theory and legacy.

The complete context of Douhet's thinking was rather complex. In exploring this context, it is first helpful to analyze his philosophical world-view within the theoretical context of the two greatest nineteenth-century theorists of war: General Carl von Clausewitz and General Antoine Henri de Jomini. It then becomes possible to distinguish the various explicit assumptions and implicit

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presuppositions throughout Douhet's works that define, and limit, its applicability. The incommunicable nightmare of the Great War looms as a ubiquitous shadow over his historical context while the spirited polemical atmosphere of interwar Italy illuminates his motivations. One of Douhet's greatest virtues (though certainly his most overlooked virtue) was the intellectual honesty to limit the scope of his claims far more than he is generally given credit for. Contrary to conventional wisdom, Douhet never asserted his theory either to have been universal or comprehensive. Rather, he openly acknowledged his focus upon one particular audience: post-World War I Italians. Finally, this calls for a close look at the importance of Italy's particular geographical context within Douhet's theory.

Along the way, it is enlightening to consider the popular treatment of Douhet's context by some of his interpreters. This is not to deny any relevance beyond interwar Italy, but merely to place the burden of proof where it belongs. It is improper to assume a priori a level of applicability for any theory far in excess of what the author himself asserts. Rather, one ought first to assume the local applicability imputed by Douhet and then seek valid justification for a broader interpretation. In this regard, it is curious that the publishers of a recent edition of Douhet's *Command of the Air* chose to depict an American F-15 Eagle on the cover, perhaps as a thinly-veiled hint of the applicability of the book's contents to twenty-first century US air power.¹ Hopefully this contextual reevaluation of Douhet's strategic airpower theory will offer some new perspectives not just on a dead Italian theorist, but also on contemporary views of airpower as part of a still-lively American polemic.

The most foundational element of Douhet's theoretical context was his philosophical worldview. Douhet's thought was permeated with a pervasive technological rationalism. He viewed war, even its human elements, in purely mechanical terms. Reflective of the slaughter of 1914-1918, he believed that war "makes whole peoples hurl themselves against one another, forgetting for a time that they all wear the aspect of human beings."² Douhet's theory matched this

1. Giulio Douhet, *The Command of the Air*, trans. Dino Ferrari (New York: Coward-McCann, 1942; reprint, Washington D.C.: Air Force History and Museums Programme, 1998), book cover.

2. Douhet, *Ibid.*, p.145.

“inhuman” view of war.³ For Douhet, human will was swallowed up in war’s totality and man became indistinguishable from machine. Airpower was the ultimate symbol of this new war-image, pitting “populations directly against populations, nations directly against nations,”⁴ causing them to “come to blows and seize each other’s throats.”⁵ This inhuman conception of war permitted Douhet’s rationalism free reign in his mechanistic theory. Six times in *Command of the Air* he referenced the “mathematical certainty” of his conclusions,⁶ four times calling them “axiomatic.”⁷ Using “iron-clad logic”⁸ as his guide, Douhet asserted that “to come to any other conclusion would be to deny reason itself.”⁹ “The problem,” he once insisted, “does not admit of partial solutions. It is right or it is not right.”¹⁰ Clausewitz once warned, “a dry pedantry of figures will forsake you;”¹¹ Douhet clearly thought otherwise.

Douhet’s rationalism was utterly antithetical to Clausewitz, for whom “in the whole range of human activities, war most closely resembles a game of cards.”¹² In cards, probability is key, not algebra. The dual focus of gambling at cards is uncertainty and psychology. Yet neither of these have a place in Douhet’s theory; as Barry Watts observed, “there is little, if any, room in Douhet’s thinking for the enemy as an active agent whose plans or actions should be taken into account.”¹³ Indeed, much of Clausewitz’s criticism is aimed against the type of mathematical rationalism Douhet embraced. Clausewitz warned that while theory can be “a guide” and “a frame of reference,” one must never “construct an algebraic formula for use on the battlefield.”¹⁴ Yet, Douhet defiantly attributed to his theory the

3. Douhet, *Ibid.*, p. 185.

4. *Ibid.*, p. 195.

5. *Ibid.*, p. 195.

6. *Ibid.*, pp. 11, 26, 36, 91, 92, 129.

7. *Ibid.*, pp. 95, 96, 103, 104.

8. *Ibid.*, p. 100; for other examples of Douhet’s rigid rationalism, see also pp.26, 119, 130, and 146.

9. *Ibid.*, p. 25.

10. *Ibid.*, p., 26.

11. Carl von Clausewitz, *Principles of War*, ed. and trans. Hans W. Gatzke (Harrisburg: Military Service Publishing Company, 1942; reprint, New York: Dover Publications, 2003), p. 12.

12. Carl von Clausewitz, *On War*, trans. and ed. by Michael Howard and Peter Paret (New York: Alfred A. Knopf, 1993), p. 97; see also p. 707.

13. Barry D. Watts, *The Foundations of US Air Doctrine: The Problem of Friction in War* (Maxwell AFB: Air University Press, 1984), p.7.

14. Douhet, n.1, p. 163.

algebraic certainty that “two and two make four... This is not theoretical or extremist; it is arithmetic, pure and simple.”¹⁵ Compared to Clausewitz, however, Douhet’s philosophy was both theoretical and extremist, allowing him to make assertions that were anathema to Clausewitz; e.g., “this is the inflexible principle I advocate, allowing no exceptions.”¹⁶ While Clausewitz viewed war as inconceivably complex, Douhet held that “war is simple, like good sense.”¹⁷

By contrast, Douhet’s rationalism paralleled, though far exceeded, that of Baron de Jomini. While Clausewitz viewed war as gambling, Douhet and Jomini viewed war as a science; indeed, this is still a quite popular American view of war. Jomini wrote, “it is beyond question that war is a distinct science of itself.”¹⁸ Likewise, Douhet frequently wrote of “the science of making war.”¹⁹ Yet, Douhet’s radical philosophy left a vast gulf between his and Jomini’s thinking. Jomini, tending more toward practicality, recognized that “war, far from being an exact science, is a terrible and impassioned drama... dependent for its results upon a number of moral and physical complications.”²⁰ Douhet, however, often demonstrated his ideas using simplistic equations.²¹ He even went so far as to directly compare his theory to those of physicists Maxwell, Hertz, and Marconi.²² Even his modest concession that the “real power of an aerial force depends... on such a large number of coefficients that none of them can be reduced to zero”²³ reveals an algebraic worldview confined by what he described as “the strait jacket of reason.”²⁴ Yet, was his strait jacket quite as reasonable, or as realistic, as he believed? As Michael Sherry observed, “as historian [Douhet] appreciated the psychological complexity of war, but as prophet he discarded it.”²⁵

15. Douhet, *Ibid.*, p. 243.

16. *Ibid.*, p. 193; see also p. 112, where Douhet asserts that his theory “is fundamental and admits no exceptions, implications, or reservations.”

17. *Ibid.*, p. 147.

18. Antoine Henri de Jomini, *The Art of War* (London: Greenhill Books, 1996), 56. Jomini also made frequent reference to “military science” and “the science of war”. See pp. 17, 57.

19. Douhet, n.1, pp. 62, 196, 205.

20. Jomini, n.18, p. 360.

21. Douhet, n.1, pp. 16-17, 243, 255.

22. Douhet, *Ibid.*, p. 187.

23. *Ibid.*, p. 138.

24. *Ibid.*, p. 294.

25. Michael S. Sherry, *The Rise of American Air Power: The Creation of Armageddon* (New Haven: Yale University Press, 1987), pp. 27-28.

With respect to technology and history, however, Douhet radically diverged from Jomini. A central theme of Jomini's theory was the historical consistency of the "immutable principles of strategy"²⁶ achieved through technological indeterminism. For Jomini, the essential principles of war were contingent upon unchanging laws of logic and geometry while the effects of technological changes were ultimately superficial to his theory. While technology had radically changed tactics and organization across history, strategy "will remain unaltered, with its principles the same as under the Scipios and Caesars, Frederick and Napoleon, since they are independent of the arms and the organization of the troops."²⁷ For Jomini, theoretical certainty required independence from technology, allowing him to assert that "the immutable principles of war cannot be violated with impunity."²⁸ In this respect, Jomini's theory contrasted starkly with Clausewitz's emphasis on uncertainty, chance, and friction that caused the Prussian general to proclaim that "talent and genius operate outside the rules."²⁹

With Clausewitz and Jomini illustrating opposite ends of the spectrum of certainty in war, Douhet claimed a curiously inconsistent position. He emphasized change and rejected historically based, immutable principles to a greater extent than Clausewitz ever did while still, somehow, asserting even greater rationalistic certainty than Jomini. The same technological determinism that Jomini rejected as antithetical to his theory, Douhet claimed as absolutely essential. Pursuant with a lifelong fascination for science and technology, Douhet began his military career as an artillery officer,³⁰ graduating first in his class from the Academy for Artillery and Military Engineering and later graduating with distinction from the Polytechnic Institute of Turin.³¹ In 1902, prior to any involvement with aviation, Douhet exhibited his progressive views by advocating complete army mechanization.³² Characteristically, in his 1921

26. Jomini, n.18, p. 331.

27. Jomini, *Ibid.*, p. 48.

28. *Ibid.*, p. 127.

29. von Clausewitz, n.12, p. 162.

30. Claudio G. Segre, "Douhet in Italy: Prophet Without Honor?" *Aerospace Historian*, vol. 26, no. 2, Summer/June 1979, p. 70.

31. Azar Gat, *Fascist and Liberal Visions of War: Fuller, Liddell Hart, Douhet, and Other Modernists* (Oxford: Clarendon Press, 1998), p. 53.

32. Gat, *Ibid.*, p. 54.

Characteristically, in his 1921 edition of *Command of the Air*, he viewed technology as the most defining factor in war.

edition of *Command of the Air*, he viewed technology as the most defining factor in war: “the form of any war... depends upon the technical means of war available.”³³ Yet, as accomplished aeronautical engineer Edward Warner concluded, “although Douhet had been a technician and a scientist, he showed but little knowledge of the problems of aeronautical engineering.”³⁴ Douhet revered technology with a facile interest that at once extolled and exaggerated its influence and yet failed to grasp its complexities.

Consequently, for Douhet, strategic principles were as mutably volatile as technology itself. As Bernard Brodie summarised, Douhet’s “essential, correct, and enduring contribution lay in his turning upside down the old, trite military axiom, derived from Jomini that ‘methods change but principles are unchanging.’”³⁵ For Douhet, “such a maxim was plain nonsense.”³⁶ Sharing Jomini’s rationalism but rejecting his underlying philosophy of historical consistency, Douhet asserted certainty, and consequently denied Clausewitzian friction, to a far greater extent than Jomini himself ever did.³⁷ Within his own philosophical context of ultimate mutability based on continuous scientific advancement, Douhet paradoxically asserted with complete confidence that future technology “cannot but add weight to the conclusion drawn here.”³⁸ Such a statement from a man living in a universe of ultimate change reveals a conspicuous lack of theoretical rigor coupled with a radically simplistic view of technology. This contradiction pervaded every aspect of his theory, from his rejection of history to his denial of friction in war.

Though a surprisingly keen and talented historical analyst himself, Douhet

33. Douhet, n.1, p. 6.

34. Edward Warner, “Douhet, Mitchell, Seversky: Theories of Air Warfare” in Edward Mead Earle, ed., *Makers of Modern Strategy: Military Thought from Machiavelli to Hitler* (Princeton: Princeton University Press, 1943), p. 492.

35. Bernard Brodie, *Strategy in the Missile Age* (Princeton: Princeton University Press, 1959), p. 22.

36. Brodie, *Ibid.*, p. 78.

37. Douhet’s neglect of friction is a central tenet of Watts, n.13.

38. Douhet, n.1, p. 113.

nevertheless viewed history as “a chain... to which life is tied and carried backwards.”³⁹ The history of the art of war, he concluded, “cannot teach us anything.”⁴⁰ Douhet’s rationalism, in contradiction to Jomini’s, was essentially ahistorical in nature. In a September 1914 article called “Futurism,” Douhet wrote, “the door of the past is closed while that of the future is wide open in front of us.”⁴¹ His war experience only intensified this philosophy. He described the interwar period, in characteristically mathematical terms, as lying on “a particular point in the curve of the evolution of war” after which “the curve drops off abruptly in a new direction, breaking off all continuity with the past.”⁴² Thus, the very bridge that Jomini crossed to achieve rationalistic certainty, Douhet burned. Douhet’s technological determinism destroyed any historical foundation for asserting his claims as anything but idle speculation. This inconsistency characterized Douhet’s thinking through his final work, *The War of 19-*, published shortly after his death in 1930. To the end, he seems never to have viewed his rationalism and technological determinism as mutually destructive. Clausewitz had emphasized mutability and uncertainty in war, Jomini emphasized immutability and certainty, while Douhet, lacking the intellectual rigor of either, saw no contradiction in simultaneously asserting both ultimate mutability and ultimate certainty in war.

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Douhet’s philosophical worldview sheds light on American perspectives on airpower. Indeed, his underlying presuppositions seem to have even greater parallels in American thought than does his theory itself; it is a dubious heritage. The traditional interpretation of Douhet, exemplified by Brodie, is that he erred only in being too progressive for his time: “Douhet’s philosophy, however farsighted, had proved critically deficient... Then the atomic bomb came and

39. Gat, n.31, p. 58.

40. Douhet, n.1, p. 256; see also pp. 26-27 wherein Douhet asserts that “clinging to the past will teach us nothing useful for the future, for that future will be radically different from anything that has gone before. The future must be approached from a new angle.”

41. Gat, n.31, p. 57.

42. Douhet, n.1, p. 29.

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changed everything.”⁴³ The common belief that technology has vindicated Douhet camouflages his underlying theoretical flaws and limitations. Yet the belief is widespread, as summarized by one US Air Force officer’s opinion that “each technical advance, from early bombsights to more powerful aircraft to the atomic bomb, brought airpower closer to the Douhetian ideal.”⁴⁴ Such faith in technology as the savior of a “Douhetian ideal” (if one can even speak us such an ideal) follows blindly in his technomechanistic beliefs. Colonel Phillip Meilinger also exhibited a Douhetian historical bias: “Given the newness of their weapon, airmen were not so fortunate in being able to look backward for a rich lode of experience they could mine, and thus they had to invent – largely and literally from thin air – a new theory of warfare that involved new strategies as well as new methods of war.”⁴⁵ Though soothing to the collective institutional ego, such historical nihilism springs largely from precarious Douhetian presuppositions.

It seems, then, that Douhet’s primary contribution to US thinking may be deeper and subtler than his actual conclusions on strategic airpower theory. David MacIsaac appropriately lamented that “the effects of technology and the actions of practitioners have from the beginning played greater roles than have ideas... One might conclude, with some distress, that technology itself may be today’s primary air power theorist; that invention may, for the moment, be the mother of application.”⁴⁶ With equal distress, Colonel Barry Watts observed the inroads of Douhetian philosophy in “the US Air Force’s tireless pursuit of ever more advanced technology” flowing from “its ahistorical character.” Thus, “the inclination of many in the Air Force officer corps to reject the relevance of

43. Brodie, n.35, p. 150.

44. Silvanus T. Gilbert III, “What Will Douhet Think of Next? An Analysis of the Impact of Stealth Technology on the Evolution of Strategic Bombing Doctrine” (School of Advanced Airpower Studies thesis, Air University, 1992), p. 43.

45. Phillip S. Meilinger, “Air Targeting Strategies: An Overview” in Richard P. Hallion, ed., *Air Power Confronts an Unstable World* (London: Brassey’s, 1997), p. 53.

46. David MacIsaac, “Voices from the Central Blue: The Air Power Theorists” in Peter Paret, ed., *Makers of Modern Strategy from Machiavelli to the Nuclear Age* (Princeton: Princeton University Press, 1986), p. 647.

history goes far to explain the Service's fixation on technology as the key to the future. "If the past is viewed as unworthy of serious study," Watts wondered, "then what else is there for a 'high-tech' institution beyond pursuing technology?"⁴⁷ In this light, Brodie's observation that Douhet's "philosophy is less challenged today than ever before"⁴⁸ ironically conveys a deep and distressing truth altogether different from his intended meaning. Douhet's philosophy is rarely even discussed, much less analysed or challenged. It has silently replaced the more self-consistent philosophies of Clausewitz and Jomini in American airpower theory.

Douhet's historical context in the wake of World War I also powerfully influenced his thinking. He assumed that land warfare technology could only intensify the static conditions of trench warfare, despite the advent of tanks and in contradiction to his own prewar advocacy of mechanized warfare. "The truth" regarding land combat, he emphasized in *Command of the Air*, "is that every development or improvement in firearms favors the defensive."⁴⁹ Even while committed to rejecting the influence of history on military theory, he was himself enslaved to an outdated and stagnant historical perception of land warfare. In light of his philosophical contradiction regarding change and certainty, his absolute confidence in this assumption is, again, utterly astounding. Land warfare was certain, he believed, to retain its "static character" because "the causes of that character still exist and will be more important in the future than they are now."⁵⁰ As late as 1929, just as the Germans (under the shadow of von Seeckt) were pioneering *blitzkrieg*, Douhet asserted in *The War of 19-* that "on land the war will present much the same

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47. Barry D. Watts, "Doctrine, Technology, and Air Warfare" in Hallion, ed., n.45, p. 22.

48. Brodie, n.35, p. 106.

49. Douhet, n.1, p. 11. [emphasis in original]

50. Douhet, *Ibid.*, p. 175.

characteristics as the World War, because no substantial changes have taken place in armament or organisation of land forces.”⁵¹ In Douhet’s mind, Clausewitz’s offensive-defensive dialectic was dead. How quickly and completely Hitler’s Wehrmacht would prove him wrong.

Surprisingly, his views on airpower and aviation technology were almost as stagnant as his views of land warfare. Just as he denied technology favoring the offensive on land, he refused to countenance any defensive aeronautical advances. Rather, he viewed the particular technological conditions of his historical context as absolute, concluding that “the airplane is the offensive weapon par excellence.”⁵² His insightful critique of the prevailing attitudes of 1914 apply perfectly to his own thinking on airpower: “The idea that the defensive, though never decisive, might be of help in gaining time and mustering strength, was completely disregarded, and the thing was carried so far that some armies did not even mention the word defense in their manuals of tactical instruction.”⁵³ That emerging technology such as radar and high performance fighters undermined Douhet’s assumptions is, perhaps, understandable.⁵⁴ That his ahistorical theory made the same errors of historical stagnancy that he found so repulsive in the French command of 1914 is not. That his fictitious *War of 19-* bore uncanny resemblance to the defensive assumptions that produced the Maginot Line mentality is even less so. Douhet, like the French generals of 1914 and 1940, was fixated upon the last war.

A final aspect of his historical context, in light of the Great War, was his captivation with its suddenness and totality. “What interests us most of all,” he wrote in *The War of 19-*, “is that war broke out suddenly, with no appreciable period of incubation.”⁵⁵ In fact, its abrupt start was merely an exaggeration of August 1914. By contrast, World War II approached so gradually and, for some, so predictably that Churchill wanted to call it “The Unnecessary War.”⁵⁶ World War II was, as Douhet predicted, largely “total in character and scope” such that

51. Douhet, *Ibid.*, p. 307.

52. *Ibid.*, p. 15.

53. *Ibid.*, p. 160.

54. John Buckley, *Air Power in the Age of Total War* (Bloomington: Indiana University Press, 1999), p. 77.

55. Douhet, n.1, p. 296.

56. Douhet, *Ibid.*, pp. 5, 6.

“the entire population and all the resources of a nation” were “sucked into the maw of war.” Yet, even this still failed to exhibit the totality of Douhet’s assumptions. As MacIsaac observed, Douhet’s chief assumption of unrestrained poison gas never occurred, thus absolving Douhet of some criticism for the war’s failure to vindicate his conclusions.⁵⁷ Yet, it also highlights his failure to accurately predict the war’s character.

The polemical context of interwar Italy’s heady atmosphere also influenced Douhet.⁵⁸ His perspective was largely an extension of the “intense modernist fascination” with technology that pervaded the “avant-garde culture” of his formative years.⁵⁹ In 1919, attracted in part by their modernist views on technology, Douhet became an ardent Fascist.⁶⁰ It was a period of dynamic debate, in Italy as elsewhere, on how to prevent another continental bloodletting. Douhet immersed himself in this “inflamed rhetorical climate... in which facile slogans all too often took the place of deeds.”⁶¹ With his profoundly intelligent and engaging mind, he remained “closely attuned to the dominant themes of his intellectual milieu.”⁶² The image of Douhet as prophet is, if accurate at all, certainly incomplete; he was also a poet, painter, playwright, novelist, and satirist.⁶³ Douhet expert Claudio Segre described him as “more of a polemicist than a systematic and scholarly thinker.”⁶⁴ In this climate, there was little room for detached objectivity, and Douhet “seldom hesitated about indulging his imagination and his taste for rhetoric and for ‘guesstimates.’”⁶⁵

In 1919, attracted in part by their modernist views on technology, Douhet became an ardent Fascist. It was a period of dynamic debate, in Italy as elsewhere, on how to prevent another continental bloodletting.

57. MacIsaac, in Paret ed., n.46, p. 630.

58. Segre, n.30, p. 73.

59. Gat, n.31, p. 52.

60. Gat, Ibid., p. 53.

61. Segre, n.30, p. 79.

62. Gat, n.31, p. 53.

63. Gat, Ibid., p. 53; and Segre, n.30, p. 71.

64. Segre, Ibid., p. 71.

65. Ibid., n.31, pp. 73-74.

Douhet admitted in the preface to his second edition of *Command of the Air* that he had carefully abridged many of the ideas in his 1921 edition in the interest of accomplishing something “practical and useful for my country.

While many interpreters have questioned Douhet’s “originality”⁶⁶ or the extent to which he was “a pioneering theorist”⁶⁷ in a universal sense, the very question obscures the context of Douhet’s theory, original or otherwise, as an integral part of a distinct national conversation. Despite similarities with other countries’ airpower pioneers, Douhet’s ideas were at once an original contribution to and a product of a unique polemic; both reflective of and reactionary to the turbulent discourse on 1920’s Italian military reform. To interpret Douhet in isolation of this polemical context is akin to hearing only one side of a conversation while ignoring the identity or ideas of the other participants. In 1927, for example, Douhet admitted in the preface to his second edition of *Command of the Air* that he had carefully abridged many of the ideas in his 1921 edition in the interest of accomplishing something “practical and useful for my country.”⁶⁸ Thus, he overtly tailored his writings to his audience in a way that separates them from the more broadly applicable writings of Clausewitz and Jomini.

Due to these polemical origins, Douhet’s theory was neither comprehensive nor universal, nor did he claim it to be.⁶⁹ Of his first edition of *Command of the Air*, he wrote that his “purpose then was simply to break ground for the acceptance and execution of a minimum program which would have constituted a point of departure for further progress.”⁷⁰ Thus, many of Douhet’s inconsistencies over time make sense in the light of his circumstances. Of auxiliary aviation, for example, he had previously “admitted its right to

66. MacIsaac, n.46, p. 631.

67. Buckley, n.54, p. 77.

68. Douhet, n.1, p. xi.

69. In contrast to Brodie’s assertion that it was a “relatively comprehensive philosophy”; Brodie, n.35, p. 72.

70. Douhet, n.1, p. 93.

existence so as not to upset too violently those whose minds found it too great a leap to abolish the auxiliary air force."⁷¹ These polemics tended to skew the debate in certain directions as evidenced in his *Recapitulation*, originally published in *Rivista Aeronautica* in 1929, in which he summarized his responses to several specific critiques of his opponents.

Douhet's unequal attention to some issues and notable paucity of rigor in others is largely attributable to the unique features of Italy's polemical terrain. Many of his sanguine assumptions, for example, on the destructive capability of bombs on urban area targets seem to have gone largely unchallenged while his opposition to aircraft carriers, an issue of more immediate concern to his opponents, generated considerable back-pressure in professional journals.⁷² In this respect, Douhet's arguments curiously paralleled those conservative elements of the Italian Navy's surface-fleet proponents, such as Naval Minister Admiral Sechi, who opposed aircraft carriers as beyond Italy's limited financial means.⁷³ In another revealing instance, carrier proponent Admiral Giuseppe Fioravanzo pointedly attacked Douhet's neglect of friction in his theory, arguing that "as time goes on, the aerial forces which were so strong and numerous at the beginning of the war might even become weaker little by little from the wear and tear of war, until they reached a state of inferiority."⁷⁴ While in most cases, Douhet responded with cogent rebuttals, in this case Fioravanzo had targeted one of Douhet's vital theoretical weaknesses. Douhet uncharacteristically dismissed Fioravanzo's well-placed argument with some

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71. Douhet, *Ibid.*, pp. 94-95.

72. Marco Rimanelli, "Italy Between Europe and the Mediterranean: Diplomacy and Naval Strategy from Unification to NATO, 1800s-2000," in Frank J. Coppa, ed., *Publications of the Studies in Modern European History*, vol. 21 (New York: Peter Lang Publishing, 1997), pp. 502-503.

73. Rimanelli, *Ibid.*, pp. 505-506.

74. Douhet, n.1, p. 221.

Another significant player in the polemical arena was General Amedeo Mecozzi. He advocated a combined-arms conception of air warfare in which operational and tactical air doctrine was employed to support land and naval forces.

unconvincing hand waving.⁷⁵ As polemical forces were never evenly distributed, then, Douhet was never forced to be uniformly rigorous in his responses.

Another significant player in the polemical arena was General Amedeo Mecozzi. He advocated a combined-arms conception of air warfare in which operational and tactical air doctrine was employed to support land and naval forces.⁷⁶ Italo Balbo pragmatically incorporated the most practical aspects of both Douhet's and Mecozzi's conclusions in Italy's young Air Force, the *Regia Aeronautica*.⁷⁷

"Neither of these theories can be altogether discarded," Balbo once told an English newspaper, "I think there is virtue in both."⁷⁸ Interestingly, Balbo clearly understood Douhet's theories to be limited in scope and thus "could not be applied in all circumstances," even within the context of Italian airpower: "Naturally, not all of Douhet's affirmations are to be taken literally."⁷⁹ Ultimately, the Mecozzi-Douhet debate remained unresolved.⁸⁰ The debate over carrier aviation, however, ended in Douhet's favor; yet, it was for reasons of power politics rather than airpower theory that Mussolini amputated the navy's air arm.⁸¹ Possibly the clearest assessment of Douhet's polemical context, then, is simply that Italy shaped Douhet far more than Douhet shaped Italy.

Douhet's most overt contextual limitation was his focus on Italy's "unique geographic situation."⁸² Warner observed that "Douhet wrote as an Italian, and he tested his theories by applying them to Italy," noting Italy's protective Alpine barrier and short flying distances from potential enemies.⁸³ Segre also concluded

75. Douhet, *Ibid.*, p. 221.

76. Segre, n.30, p. 76.

77. Claudio G. Segre, *Italo Balbo: A Fascist Life* (Berkeley: University of California Press, 1987), p. 154.

78. Segre, *Ibid.*, p. 154.

79. Segre, *Ibid.*, pp. 154, 155.

80. Segre, n.30, p. 79.

81. Rimanelli, n.72, p. 514.

82. Douhet, n.1, p. 141.

83. Warner, n.34, p. 499.

that Italy “was at the center of Douhet’s thoughts. Its strategic and economic problems, especially during World War I, deeply influenced his thinking.”⁸⁴ Accordingly, Douhet’s writings were not “general theories” but “specific solutions to his country’s military problems.”⁸⁵ In the end, Douhet had “Italy’s salvation specifically in mind.”⁸⁶ This view is buttressed by Douhet’s own “wish” that “people could understand that I am thinking primarily of our own situation. When I say that the aerial field of action will be decisive, I refer to Italy.”⁸⁷

This contextual issue has generated some controversy. Bernard Brodie, heavily referencing Douhet in his theory on thermonuclear warfare, eschewed the “legend that his primary if not exclusive interest in advocating his ideas was the defense of Italy.”⁸⁸ Brodie concluded that “Douhet’s mind and ideas were much too big to suffer confinement to a single country’s military problems, particularly those of a second-class power like Italy.”⁸⁹ The evidence from Douhet’s own writings, however, indicates that on this point Brodie was grossly mistaken. The assertion that Douhet saw Italy as a “second-class power” represents the wholesale imposition of a postwar American, perhaps even a touch patronizing, perspective that could not have been further from Douhet’s thought process. Quite to the contrary, Douhet the Fascist strongly embraced Mussolini’s view of Italy as a modern reincarnation of ancient Rome.⁹⁰ In fact, “Douhet’s mind and ideas” were far too grandiose and patriotic to think of Italy as anything but a burgeoning world power with “an imperial destiny” employing aviation as the tool “with which to carve out her future.”⁹¹

That Douhet was primarily concerned with Italy’s “peculiar conditions” is clear.⁹² For example, his aforementioned view of static, defensive land warfare was not only shaped by the Great War, but also by the most dominant feature in Italian land warfare: that “Alpine barrier” that “gives us the power to bar the door of our

84. Segre, n.30, p. 70.

85. Segre, *Ibid.*, p. 70.

86. *Ibid.*, p. 79.

87. Douhet, n.1, p. 259.

88. Brodie, n.35, p. 81.

89. Brodie, *Ibid.*, p. 82.

90. Douhet, n.1, p. 81-82.

91. Douhet, *Ibid.*, p. 141.

92. *Ibid.*, p. 289.

Thus, while Italy's geographic isolation largely resembled that of the British Isles, it was utterly unlike the German or Russian positions.

house."⁹³ From this viewpoint, it was not unreasonable to conclude that "whoever our enemy may be, we will encounter him in the high mountains near the frontier; and in the mountains our army will have to wage a long and bitter fight."⁹⁴ Thus, while Italy's geographic isolation largely resembled that of the British Isles, it was utterly unlike the German or Russian positions. It resembled even

less the geographical context of American global power projection.

Italy's peninsular geography was also significant as a "bridge across the Mediterranean."⁹⁵ For Douhet, the Mediterranean basin, not continental Europe, was Italy's natural growth region, just as it had been for the Roman Empire. Yet, he also realized that Italy was "shut up in the Mediterranean Sea" and thus advised, "as to any aspirations toward making the oceans ours, let us forget them."⁹⁶ Douhet's theory did not apply in the expansive Atlantic context.⁹⁷ Due to the Mediterranean's small size, however, all naval vessels would be within striking range of land-based aircraft. Thus, "as long as the enemy Air Force is intact, the fleet operating in the Mediterranean could always be attacked by it... An Independent Air Force can fly in any direction over this great sea, against naval bases, cruising fleets, commercial ports, and lines of communication."⁹⁸ His ideas were overtly limited to "*preventing anyone from sailing in the Mediterranean without our consent.*"⁹⁹ Such a limited navy would have no need of aircraft carriers since "if we are in a position to dominate our own sky, we will automatically be in a position to dominate the Mediterranean sky as well."¹⁰⁰ Keeping "in view our own particular situation, lying athwart the Mediterranean Sea,"¹⁰¹ Douhet overtly

93. Ibid., p. 139.

94. Ibid., p. 135.

95. Ibid., p. 207.

96. Ibid., p. 286.

97. Ibid., p. 284.

98. Ibid., p. 219.

99. Ibid., p. 283. [emphasis in original]

100. Ibid., p. 141.

101. Ibid., p. 219.

rejected the applicability of his theory to “an English, American, or Japanese naval force operating in the Atlantic or Pacific Ocean.”¹⁰² A cogent passage from Douhet’s pen shatters Brodie’s argument of a universal theory:

Naturally, my first thought is of our own situation and the eventuality of a possible conflict between Italy and some one of her possible enemies. I admit that the theories I expound have that in the background, and therefore should not be considered applicable to all countries. In all probability, if I were specifically considering a conflict between Japan and the United States, I would not arrive at the same conclusions. To offer a general recipe for victory, applicable to all nations, would be downright presumption of my part. My intention is simply to point out the best and most efficient way for our country to prepare for a probable future war.¹⁰³

Nonetheless, Douhet did occasionally apply his theory to other countries which, at least superficially, seems to contradict his self-imposed geographical limitations. Bernard Brodie supported his universalistic Douhetian interpretation with the observation that the belligerents of *The War of 19-* were France, Belgium, and Germany, “with Italy playing no part at all.”¹⁰⁴ Elsewhere, Douhet applied his theory in speculating on the character of an air war between Paris and London. Upon careful examination, however, these examples actually confirm his distinctly Italian viewpoint. Consciously or otherwise, his foreign examples consistently reflect a notably Italian geo-strategic bias. In the Anglo-French war, the English Channel performed the same function of isolating the belligerents as the Alps did for Italy. Further, his citation of British Prime Minister Baldwin remarking in 1924 that “the history of our insularity has ended, because with the advent of the airplane we are no longer an island”¹⁰⁵ applies as well to Italy as to Britain. In *The War of 19-*, Douhet had the Germans

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102. Ibid., p. 219.

103. Ibid., pp. 252-253. [emphasis added]

104. Brodie, n.35, p. 82.

105. Douhet, n.1, p. 185.

fortify the Rhine region and the narrow Belgian frontier, creating a “static form of war.”¹⁰⁶ Within these static confines, he wrote, the “frontiers of the great powers are not long enough to allow full deployment to the huge modern armies,” thus producing a “continuous front.” This artificial geographic isolation again reflected Italy’s situation. It is significant that these scenarios were inapplicable to a German war of maneuver against Russia or Poland, or in reality against France as the Germans proved in 1940. Further, even in his Franco-German scenario, Douhet conveniently ignored the definitive bane of German strategy: the threat of a two-front war. For this, his theory offered no answers; but then, as his message was intended for Italians and not Germans, French, Russians, or Poles, there was no need to let strategic realities get in the way of his main point. Thus, even his foreign examples illustrate how Italy’s geographic context pervaded his theoretical writings.

Intriguingly, subsequent interpreters have generally paid little attention to Douhet’s complete theoretical, historical, polemical, and geographical contexts. With few exceptions, the general trend has been to assume his theory’s increasing validity over time and universal applicability beyond Italy; the latter being a distortion that Douhet himself would have choked on. Even in 1943, prior to the atomic era, Warner wrote that the case for Douhet’s validity was stronger than it had been a decade or two prior and “it is altogether probable that the passage of another decade will make it stronger still.”¹⁰⁷ “On general principle,” Warner continued, “time works with Douhet.”¹⁰⁸ After 1945, most airpower advocates in the US argued that the atomic bomb had rejuvenated Douhet’s theory.¹⁰⁹ The advent of thermonuclear weapons and ballistic missiles further strengthened this feeling that “Douhet has come into his own.”¹¹⁰

Most airpower analysts have ignored Douhet’s biases and presuppositions. The overwhelming majority agree with Brodie that “the framework of strategic thought he created is peculiarly pertinent to any general war in the nuclear

106. Douhet, *Ibid.*, pp. 307-308.

107. Warner, n.34, p.497.

108. Warner, *Ibid.*, pp. 496-497.

109. Robert Frank Futrell, *Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force: 1907-1960*, vol. 1 (Maxwell AFB: Air University Press, 1989), p. 239.

110. Brodie, n.35, p. 402.

age.”¹¹¹ More recently, Air Force General Charles Link indicated that Douhet’s theory was “not in error but merely postponed” and was vindicated by Desert Storm.¹¹² As Earl Tilford accurately observed, the “general theme” echoed by “senior USAF officials... along with civilian airpower enthusiasts” was that the performance of US airpower in Desert Storm, especially that of the Air Force, “had made a reality of the prophecies of Italian theorist Giulio Douhet.”¹¹³ The shadow of Douhet over Desert Storm became a soapbox for many such as Edward Luttwak who claimed that US airpower had “finally recovered the lost qualities” of Douhet’s airpower theory and restored “the promise of ‘victory through air power’... after a 70-year detour.”¹¹⁴ Though popular, this understanding of Douhet’s theory is simplistic, inaccurate, and profoundly anachronistic. The burden of proof rests upon those who invoke Douhet’s name thus to demonstrate how his theory and ideas transcended his own context. While this may be possible, very few have recognized the need to do so.¹¹⁵

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Douhet’s legacy belongs in the history books rather than in the marketplace of twenty-first century strategic thought. He was a man of his time: creative, intelligent, literary, innovative, artistic, observant, and most of all, politically active. It is greatly to his credit that he never made more out of his theory than it warranted. Unfortunately, later generations of over-zealous disciples in a foreign land across the Atlantic have largely failed to live up to this high standard. It is

111. Brodie, *Ibid.*, p. 106.

112. Charles D. Link, Richard H. Shultz, Jr. and Robert L. Pfaltzgraff, Jr., eds., “The Role of the US Air Force in the Employment of Air Power” in *The Future of Air Power in the Aftermath of the Gulf War* (Maxwell AFB: Air University Press, 1992), p. 85.

113. Earl H. Tilford Jr., William Head and Earl H. Tilford Jr., eds., *The Eagle in the Desert: Looking Back on U.S. Involvement in the Persian Gulf War* (Westport: Praeger, 1996), p. 107.

114. Edward Luttwak quoted by Caroline F. Ziemke, “A New Covenant?: The Apostles of Douhet and the Persian Gulf War” in Head and Tilford Jr., eds., *Ibid.*, p. 291.

115. Gat, n.31, pp. 52-53.

unfortunate, then, that Douhet has been so often criticized for failing to fulfill prophecies he never made. Touting his universal applicability exchanges Douhet the myth for Douhet the man. If this seems a harsh judgement, perhaps one should heed Douhet's own words: "Hannibal is dead, Napoleon is dead, Moltke is dead; tomorrow we shall be dead too; let us respect the past, but let us create the future."¹¹⁶ Out of respect, then, it is high time to accept him for who he was: a fertile mind complete with his own thoughts, biases, limitations, and contradictions. We should study, respect, and understand his important place in history, but move out from under his shadow and create our own future.¹¹⁷ As Douhet said of those that went before him, "Let us leave once and for all those poor dead in peace." A good start would be to refrain from raising his flag upon hills he never knew.

116. Gat, *Ibid.*, p. 58.

117. *Ibid.*, p. 58.

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