TRANSFORMING THE IAF : TARGET 2022

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INTRODUCTION

Since independence, despite attempting to follow a non-aligned foreign policy and repeatedly attempting to portray peaceful intentions, especially to her neighbours, India has been forced into four wars by Pakistan and one by China. Except in 1971, India has not acquitted herself well. In 1962, when the Indian debacle was the worst, airpower was not even employed. The reasons remain a mystery to this day. IAF played a significant role in achieving victory during the 1971 Indo-Pak war. Contribution of airpower in the Gulf wars and the campaign in Afghanistan are well recognized and documented.

India's economy has been growing at an average of 8-9% over the last decade. External trade has increased manifold, especially due to the country's dependence on imports for most of her energy needs. Indian companies have acquired hydrocarbon equities in Venezuela, Cuba, Sudan, Central Asia and Sakhalin in the Far East. The Indian expatriate community has been expanding its presence and assets across the world. Any of the above could become hostage to local contingencies. These contingencies could, in some cases, require appropriate military capabilities to back up India's diplomatic actions.

India's immediate neighbourhood is filled with countries hostile to her interests. China is vitiating this environment further by building military capabilities in countries surrounding India. With India emerging as an economic power and a competitor for scarce resources of energy, water and food, with a significant unresolved border dispute pending for long, and the rapid modernization of Chinese armed forces, conflict potential between the two not-very friendly neighbours is fairly high. India needs to build up her military capability to cater for such a scenario.

Countries need the sum of their national power to progress. Military power is a critical component of that national power, without which, as history bears out, progress is possible only upto the point where it clashes with the interests of another stronger nation. Aerospace power is an increasingly vital part of that military power. Aerospace power, as it is well known, is premised on cutting-edge technology; in fact, it even determines the direction of technological advancement. Recent developments have endowed aerospace power with unprecedented force enhancement, be it in reach, accuracy, carrying capacity or precision. The speed at which modern aerospace forces[1] can travel to any point on the globe is orders of magnitude greater than that of the fastest surface forces. No place on Earth is more than a few hours away, and traditional defensive barriers such as tall mountains and great oceans no longer provide sanctuary. Aerospace power is astonishingly reliable, effective and responsive. It enables effect-based and parallel operations, and can create strategic effects. It offers a solution in almost any situation, in peace, or in the many shades of conflict. Aerospace power has become an "instrument of choice".

IAF, with its ability to enhance its strategic reach and persistence, needs to transform itself so as to enable effective handling of the future geo-strategic and geo-economic compulsions.

Hypothesis

IAF is the sixth largest Air Force in the world. Equipment of the IAF is largely old, in many cases outdated and the inventory levels have reduced significantly. There is a shortage of suitably qualified professionals at different levels and in different branches and trades. "Considering the geo-strategic environment around us, IAF, with its inherent versatility and flexibility, needs to transform itself and enhance its strategic reach and persistence, so as to be able to effectively contribute to the handling of the future geo-strategic and geo-economic compulsions in early 21st century, upto say, 2022".

Aim

The Aim of this thesis is to examine the likely threat spectrum and the nature of future wars in early 21st century (upto say 2022), and, based on the likely roles and missions, assess the changes which the IAF needs to undergo, and work out a broad plan of action to accomplish those roles and missions.

Scope

The subject is examined based on information available in the open domain. To that extent, the scope will be restricted in its accuracy. This paper could be utilized as a basis for preparing a more specific and classified plan for transforming the IAF.

Methods of Data Collection

The sources of information for this study were reference books, encyclopedias, defence magazines, Internet articles and contents of speeches by guest speakers at this College.

Organization of the Thesis

The Thesis will be organized in the following manner:

(a) Chapter I : Essence of Aerospace Power

(b) Chapter II : Threat Spectrum

(c) Chapter III : China's Military Modernization

(d) Chapter IV : Transformation of the USAF

(e) Chapter V : Nature of Future Wars

(f) Chapter VI : Effective Joint Operations

(g) Chapter VII : Transforming the IAF

(h) Conclusion

CHAPTER I
ESSENCE OF AEROSPACE POWER

Versatility and flexibility are the hallmarks of aerospace power. Versatility in aerospace power is underscored by the fact that it can be employed equally effectively at the strategic, operational, and tactical levels. Flexibility allows aerospace forces to exploit mass and manoeuvre simultaneously to a far greater extent than other forces. Flexibility allows aerospace operations to shift from one campaign objective to another, quickly and decisively, across theatres. Only aerospace power can threaten enemy's leadership, infrastructure, military, and national will, all on day one of the conflict[2]. Aerospace attacks can be simultaneous and continuous

against a broad spectrum of targets, and with sufficient force to simply overwhelm an enemy. The versatility of aerospace power, properly executed in parallel attacks, attains parallel effects, presenting the enemy with multiple crises so quickly that there is no way to respond (i.e. strategic paralysis).

Strategic Paralysis. Col Warden and Col Boyd, USAF, propounded the path-breaking theories of paralysing the enemy by strategic application of air power.[3] In his treatise, "Patterns of Conflict", Boyd emphasized that strategy should always revolve around changing the enemy's behaviour, not annihilating his forces. While Boyd talks about paralysing the enemy psychologically and weakening his will to fight, Warden emphasises the need to physically paralyse the adversary by attacking leadership, infrastructure, communication links and fielded forces as part of his now famous "Five Ring Theory" based on Clausewitz's centres of gravity, which formed the heart of the air campaign in Operation Desert Storm. The cornerstone of this process is the high probability of pounding an enemy into submission without inflicting too many casualties and reducing the intensity of contact battles by driving his leadership "underground," blinding him, rendering his senses (eyes and ears) ineffective and destroying reserves and follow-on forces by carrying out deep precision strikes.

Boydian Approach and Non-Linearity. Non-linearity means that the output is not directly proportional to the input. Instead, the ratio of output to input can rapidly grow larger or can de-escalate to a miniscule value. If we operate within the prediction horizon because we can be certain about the outcome, then the enemy can also predict our outcome and can adjust his actions accordingly. We are then subjecting ourselves to vulnerability. The Boydian approach tracks extremely well with the non-linear dynamics of war[4]. He refers to the Strategic Game as "A game in which we must be able to diminish the adversary's ability to communicate or interact with his environment while sustaining or improving ours". He advocates that we "Deny the adversary the opportunity to cope with events as they unfold."

Need for Asymmetric Capability. While the strategic air campaign that aims at paralysis is based on overwhelming asymmetry that US forces are likely to enjoy in any conflict scenario, it is important for policy and strategy planners in India to understand the tremendous advantages of creating an asymmetry[5] vis-à-vis potential adversaries by building up a potent strategic air capability that is built around technology, force multipliers, long reach, persistence and multi-theatre capability. At no stage is it considered that aerospace power alone, and that too

the strategic air campaign alone, can win a war by itself. What it certainly can do, by applying the principles of asymmetry and paralysis, is hasten the capitulation of an enemy by incapacitating him and reducing his military potential, rather than destroying him. All this can be done by aerospace power simultaneously while providing support to the surface campaign by exploiting its ability to conduct parallel warfare[6] at the tactical, operational and strategic levels.

Classic Roles. Aerospace power has classic roles, which have been described variously. The roles could be referred to as deterrence, punishment, protection, projection and peace-time roles (D4P). It will be readily apparent, that India needs the IAF to have all of these. The IAF must be a strong "deterrent" in a tough neighbourhood. Implicit in the deterrence is the ability for swift, calibrated, but effective "punishment". Also, the longer our effective reach, the more credible will our deterrence be. So will our projection be.

Coercive Use of Airpower. Coercive force – either threatened or applied – is intended to change the behaviour of the adversary on major security issues, such as deterring war, compelling surrender in war-time or the sacrifice of national territory[7]. It differs from force that is employed for the simple purpose of destroying a target. When surrounded by neighbours who have first use of nuclear weapons as their declared doctrine, and cultivated irrationality their open behaviour, doctrine of second strike does not remain a credible deterrent. A credible airpower capable of pre-emptive/immediate and surgical punishment would be the only deterrent.

Fundamental Requirements. Stunning technological progress during the 20th century made the *essence* of aerospace power a physical reality. However, three fundamental requirements must be met before the physical reality becomes practical and useful. The first requirement is the most obvious: the availability of appropriate kinds and numbers of aerospace assets. One must understand that required air assets go far beyond airframes and munitions. Infrastructure—which educates, trains, disciplines, motivates, and cares for airmen and their equipment—is essential.

The second fundamental requirement is access to timely and accurate intelligence. Airpower historian Phillip Meilinger once claimed that "in essence Air Power is targeting, targeting is intelligence, and intelligence is analyzing the effects of air operations."[8] The target intelligence required is not just about technical and tactical matters such as location, construction, defenses, and so forth. Of equal importance are the strategic and operational level requirements to understand if, why, and to what extent operations against potential targets will contribute to

the overall military effort and, ultimately, to achieving political objectives. Strategic and operational level intelligence informs decision makers about *what* airpower should do. Tactical-level intelligence informs decision makers about *how* airpower should do it. Part of the intelligence requirement is the need to accurately assess the results of operations. Assessing actual target damage has been difficult for airmen since the earliest days of military airpower.[9] Even with modern sensor capabilities, it remains a vexing problem.[10] The situation is further complicated by the need to assess not only tactical-level damage, but also the operational and strategic level effects of that damage.[11] Measuring first order effects of aerospace operations remains a difficult and complex task. Measuring second and third-order effects is even more problematic.

The third fundamental requirement is the political will to fully exploit the essence. In the eyes of many airmen, political will has been their Achilles' heel. In the post–Cold War era, the fear of inflicting undue civilian casualties and the fear of losing international and public support have limited the political will. Decision making at the different levels in the Escalation Ladder need to be worked out, war gamed and firmed up *a priori* during peacetime, to avoid dithering during a crisis.

Strategic Surprise. The possibility of achieving decisive results from attacks launched at short notice is improving greatly with advances in technology. Indeed, strategic surprise offers both golden opportunities and lethal dangers[12]. The following issues need attention:

(a) Intelligence. Timely intelligence is an important element in the information-decision chain. Intelligence gathering cannot be a passive activity. To avoid getting surprised, intelligence gathering has to be proactive and to a great extent anticipatory.

(b) Surprise Effect, not Surprise, is the Challenge. Ideally, a surprise assault should render its target enemy an all but helpless victim, unable to recover from the initial disadvantage in which it was placed. Only in the rarest of cases is a strategic or operational level surprise itself so damaging that the defender is rendered incapable of recovery. If we are alert and flexibly adaptive, we should be able to ensure that no enemy who catches us by strategic surprise would profit by the deed. In his *Annual Defense Review* for 2001, Defense Secretary Donald Rumsfeld advised as follows, "Defense planning must assume that surprise is the norm, rather than the exception. Adapting to

surprise¯adapting quickly and decisively¯must be a hallmark of 21st century defense planning"[13].

(c) Avoiding Unpleasant Surprises. Extensive net assessment, planning for contingencies and training for them, and high quality intelligence could enable us to avoid some unpleasant surprises.

Precision Strike. One need only look back to the raids on Schweinfurt, Germany in World War II to see how dramatically precision weapons have enhanced our capabilities over the last 50 years[14]. Two raids of 300 B-17 bombers could not achieve with 3,000 bombs what two F-117s can do now with only four. Precision weapons have truly given a new meaning to the term *mass*.

(a) Mobility. Precision weapons also constitute a revolution in mobility. Of the 85,000 tons of bombs used in the Gulf War, only 8,000 tons (less than 10 percent) were PGMs, yet they accounted for nearly 75 percent of the damage. All the PGMs could be airlifted with just five C-5s a day.[15]

(b) Human Cost. Along with increasing the combat capability, PGMs reduce the human costs of war. Each Schweinfurt raid placed 3,000 airmen in harm's way. Today, the same job can be done with just two airmen.

(c) Cost Effectiveness. Few weapons deliver so much for so little. At $69,000 a piece, the GBU-27 which destroyed the communications building in downtown Baghdad might seem expensive, but compared to the multimillion-dollar telephone switching center it destroyed on the first night of Desert Storm, and the disruption it caused the Iraqi high command, it was a real bargain. Expending a single 500-pound GBU-12 worth $10,000 to destroy a $1.5 million T-72 tank is not a bad return either.

(d) Strategic Paralysis. The option of strategically paralyzing an enemy with precision munitions (if that will get him to change his mind) is more appealing than the alternative : annihilating him. Liddell Hart observed that the enemy of today is often the ally of the future: "To inflict widespread and excessive destruction is to damage one's own future prosperity, and, by sowing the seeds of revenge, to jeopardize one's future security."[16] History has demonstrated that wholesale attacks on population centers do little to break the enemy's will to resist. On the other hand, the surgical removal of an enemy's most vital elements could make him surrender. Secretary of Defense Les Aspin observed that air power was "the most significant factor in winning

[the Gulf] war" and pointed out that "the mass and precision of the [air] attack induced systemic shock and paralysis from which the political and military leadership never recovered."[17]

(e) Collateral Damage. If the targeting-intelligence and assignment decision making is correct, then it would be possible to achieve very minimal collateral damage. This assumes great importance in shaping public opinion and support in view of the presence of real time globalised media coverage. Accurate intelligence is essential. It is now a well-known fact that air power is targeting and targeting is intelligence.[18] Precision weapons now have "air-shaft accuracy" and so must our intelligence. Employment of Non-Lethal weapons could be a good option in certain conditions.

(f) Air Dominance. Of course, precision warfare is not possible without first controlling the air. As Gen Charles A. Horner succinctly observed, "Everything is possible if you have air superiority—little is possible if you lose it."[19] While air superiority is only one aspect of air dominance, precision strike is itself the other component.

Special Operations. The USAF Special Operations Forces (AFSOF) Doctrine clearly stipulates the following principles:[20]

(a) AFSOF are inherently offensive in nature. They seize the initiative by determining and exploiting enemy vulnerabilities to establish relative superiority at a given time and place.

(b) AFSOF is an asymmetric aerospace power function.

(c) AFSOF are versatile. They can produce parallel effects.

(d) AFSOF are usually employed in small numbers relying more on efficiency of attack than overwhelming with quantity.

(e) At the strategic level, AFSOF are expeditionary in nature. Their focused training and small initial logistics footprint allow them to deploy rapidly; ready for immediate action.

(f) Achieving surprise is a principal capability of AFSOF. AFSOF concentrate their combat power at the decisive time and place for each specific objective, accomplish the mission quickly, and then withdraw before the enemy can react in force.

Network Centric Warfare. Network Centric Warfare involves networking simultaneously in all three domains of warfare. In its fully mature form, NCW possesses the following characteristics:[21]

(a) Physical Domain. All elements of the force are robustly networked achieving secure and seamless connectivity and interoperability.

(b) Information Domain. The force has the capability to share, access, and protect information to a degree that it can establish and maintain an information advantage over an adversary.

(c) Cognitive Domain. The force has the capability to develop high quality awareness and share this awareness, including the capability to develop a shared understanding of the commanders' intent. The force has its capability to self-synchronize its operations.

The central hypothesis of NCW is that a force with these attributes and capabilities will be able to generate increased combat power by better synchronizing effects in the battle space, achieving greater speed of command and increasing lethality, survivability, and responsiveness.

To date, thinking about and experimenting with NCW concepts has tended to focus on the tactical and operational levels of warfare. But they are applicable to not only all levels of warfare, but to all types of military activity. At the operational level, networkcentric operations provide commanders with the capability to generate precise war fighting effects at an unprecedented operational tempo, creating conditions for the rapid lockout of adversary courses of action. NCW concepts dramatically improve a force's ability to quickly, efficiently, and effectively bring to bear all of its available assets to accomplish assigned missions. These improved warfighting capabilities result in part from the ability of a force to achieve a high degree of integration across a number of dimensions, the ability to substitute information for mass, and the ability to move information instead of moving people and material. NCW allows forces to adapt more quickly to a dynamic environment.

NCW : The Non Linear Model. A network-centric concept of war fighting is not simply an improvement or extension of a platform-centric model, but involves a new way of thinking about military operations—a new mental model. This new mental model is focused upon sharing and collaboration to create increased awareness, shared awareness, and, as a result, improved synchronization. This model

modifies the existing linear, sequential model in which information is collected, processed, and provided to a decision-maker for decision and then action. The new mental model serves to integrate military operations and provides an opportunity to employ new, more responsive approaches to command and control.

Rapid Decisive Operations. Most experts agree that no genuine military transformation or revolution will occur without a corresponding change in operational concepts. Merely replacing old equipment with new is not enough. Militaries must also develop new *ways* to link tactical actions to strategic *ends*.[22] RDO is an emerging concept under development by the Joint Futures Lab (J9) of US Joint Forces Command. RDO will integrate knowledge, command and control, and effects-based operations to achieve the desired political/military effect. In preparing for and conducting an RDO, the military acts in concert with and leverages the other instruments of national power to understand and reduce the regional adversary's critical capabilities and *coherence* by dictating the terms and tempo of the operation. The adversary, suffering from the *loss of coherence* and unable to achieve his objectives, chooses to cease actions or has his capabilities defeated.[23] This approach also has the benefit, as retired Marine General Anthony Zinni remarked, "of forcing political and military leaders to focus on the specific effects they want military (and nonmilitary) actions to achieve".[24]

Aerospace power would seem to have a very bright future. But dark clouds loom on the horizon. Just as an *essence* exists, so does a twofold reality that produces a dilemma airmen must face. The reality is that because aerospace power has become so valuable to so many in so many different ways, the demand for it is virtually unlimited. The reality is that aerospace resources are very limited and becoming even more limited. There is a growing supply and demand mismatch. All of this produces a classic dilemma for tomorrow's leaders. How can airmen exploit unlimited options and satisfy unlimited demands with increasingly limited resources? How aerospace leaders deal with this dilemma across the entire spectrum of conflict will determine much about the future of aerospace power.

CHAPTER II
THREAT SPECTRUM

Environment Scan

Asian Power Play. In the evolving geo-strategic environment of the world today, the centre of power play is shifting to Asia. Spurred by booming economies,

there is rapid development, burgeoning consumer demand and, naturally, growing military capabilities. This region is also one of turmoil and instabilities, as peoples attempt to determine and reshape their destinies. The Middle East is in turmoil, with seemingly insurmountable problems in Iraq. A number of other oil-rich nations are politically unstable.

Immediate Neighbourhood. In India's immediate neighbourhood, Pakistan is afflicted with sectarian violence and fundamentalist violence. Afghanistan is nowhere near settled. Nepal is not yet out of the woods. Bangladesh has a military-backed temporary government and elections are distant. The age-old ethnic conflict in Sri Lanka continues unabated. Nuclear China is politically stable, economically strong and is governed by a single party Communist system. Its acquisitions, actions, pronouncements and growing strength cause most neighbours and even the US to be wary. It is also a region of nuclear proliferation and the cradle and playground of terrorism. South Asia mirrors all the concerns of the continent. Within this tumultuous new Asia, India is situated in perhaps the most volatile

Figure 1

Map of Strategic Neighbourhood

part of the region. India's old concerns and issues with Pakistan and China have not diminished, and both of them are more powerful today, the latter significantly so. There is considerable increase in Chinese power and influence in the countries surrounding India. This is a matter of serious concern. In addition, the region is also threatened by non-state actors. The problem of terrorism is serious.

Strategic Neighbourhood. In the context of the new economic factors, India's growth depends on sources and resources that lie distant from the homeland and they also become her vital national interests. Naturally, there always is a competition for resources and that, in turn, generates newer threats. Thus, we have a number of new security considerations, those of trade security and energy security. Since the bulk of India's energy requirements is met through imports, energy security becomes a critical issue, at least until it is able to action her previous President Kalam's advice and achieve "energy independence", not merely "energy security." The redrawn strategic boundaries of a resurgent India, therefore, extend from the Persian Gulf and southern Africa to the Straits of Malacca and from the Central Asian Republics to the Antarctic Ocean. The enlarged strategic geography necessitates not only a radical change in its strategic thinking, but also accentuates the role of aerospace power in the new security paradigm.

Indian Ocean Region

"Whoever controls the Indian Ocean dominates Asia. This ocean is the key to the seven seas in the twenty-first century; the destiny of the world will be decided in these waters."

Alfred Thayar Mahan

The Indian Ocean and the states on its littoral are of significant and growing importance. The Indian Ocean region suffers from a high level of international and internal conflict. Military power, including weapons of mass destruction and their delivery vehicles, is looming larger in the region. Iran, Malaysia, Pakistan and a large number of littoral states are strengthening their militaries, especially their navies and air forces. Moreover, many extra-regional states, especially China, are emphasizing power projection capabilities, through acquisition of more advanced military hardware and construction of new bases intended for forward deployment. The region is characterized by growing strategic competition involving both external powers and the littoral states. The continuing rivalry between India and China, the "peer powers of Asia", has the potential to worsen. From Beijing's evolving role in the Indian Ocean region including Chinese proliferation of WMD,

provision of conventional arms to various South Asian states, "special relationships" with Pakistan and Myanmar, growing presence of the PLA in areas adjacent to India's borders, and rapidly developing aerospace and naval capabilities, it is clear that China is India's number one security concern.

Military Threat Spectrum

Uncertainty is the defining characteristic of today's strategic environment[25]. The strategic environment is itself in a transitionary phase. There could be unpleasant surprises. Nuclear capability has brought in an artificial parity among adversaries, even though there may be an asymmetry in conventional force levels and capabilities. Under such circumstances, countries and non-state actors are increasingly resorting to non-conventional methods to achieve their aims.

In the 21st century, nations face the following types of military threats:

(a) Traditional Threats. These are posed by states employing conventional military capabilities and forces in fairly well understood forms of military conflict.

(b) Irregular Threats. These threats come from those employing unconventional methods to counter the traditional advantages of stronger opponents.

(c) Catastrophic Challenges. These involve the acquisition, possession and use of WMD or methods producing WMD like effects.

(d) Disruptive Threats. These may come from adversaries who develop and employ breakthrough technologies against crucial vulnerabilities so as to negate the existing advantages in key operational domains. Technological breakthroughs in areas like biotechnology, cyber operations, space, or directed energy weapons could seriously endanger the security of nations.

These categories could overlap. Actors proficient in one could be expected to try and reinforce their position with methods and capabilities drawn from others. Some examples are as follows :

(a) USA's adversaries in Iraq and Afghanistan presented both traditional and irregular challenges.

(b) Terrorist groups like Al Qaeda are irregular threats, but also actively seek catastrophic capabilities.

(c) North Korea and Pakistan pose traditional, irregular and catastrophic threats.

In the future, opponents could be expected to attempt to combine truly disruptive capability with traditional, irregular and/or catastrophic forms of warfare.

John Arqyilla and David Sonfeldt, of Rand Corp, have postulated that two new modes of conflict in particular are going to define the information-age conflict spectrum: "cyberwar" and "netwar". Both terms refer to *comprehensive* approaches to conflict based on the centrality of information, comprehensive in that they combine organizational, doctrinal, strategic, tactical and technological innovations, for both offense and defense. Each term refers to a different end of the conflict spectrum. "Cyberwar is an information-oriented approach to battle that may be to the information age what *blitzkrieg* was to the industrial age and will feature at the military end of the spectrum, where the language is normally about high-intensity conflict (HIC) and major regional conflict (MRC). Netwar is an information-oriented approach to social conflict and will figure increasingly at the societal end of the spectrum, where the language is normally about low-intensity conflict (LIC), operations other-than-war (OOTW), and other, mostly nonmilitary, modes of conflict and crime. Whereas cyberwar will usually feature formal military forces pitted against each other, netwar will often involve nonstate, paramilitary, and irregular forces".[26]

CHAPTER III
CHINA'S MILITARY MODERNISATION

[China] must actively seek to promote the revolution in military affairs with Chinese characteristics and make efforts to achieve development by leaps and bounds in national defense and armed forces modernization.

—Wen Jiabao, 16March2004

Mao's "People's War" doctrine was premised on the philosophy of exploiting the strategic depth that China's geographical spread provided, to allow the attacker's offensive to peter out, with logistic lines extensively stretched and vulnerable; followed by concerted offensive by the defender against an over-extended enemy and defeating it with a combination of guerrilla and conventional war. Historically, countries have sought to generate strategic depth by controlling territory ahead of

their traditional borders even where their own geographic spread has been large. It is exemplified by China's territorial claims in India's northern and eastern borders.

China is in the process of a rapid modernization of its armed forces. Its Defence White Paper 2004 has laid out three phases for modernization:

(a) By 2010, it intends to be adequately prepared for regional conflicts, with Taiwan or other regional powers (India, Vietnam ?).

(b) By 2020, it intends to achieve parity with middle level powers, like Russia, EU, and Japan.

(c) By 2050, it aims at full-fledged superpower status with a Blue water Navy. Towards this end, it is talking of fighting Limited wars under conditions of Informationalisation. This includes a conflict over Taiwan where US intervention is inevitable.

Military Modernization. Many analysts feel that the PLA is at least 10 to 15 years away from achieving what may be termed RMA-ready capabilities at par with the Western armed forces of today. China's Defence White Paper 2004 categorically lays down the contours of its military strategy when it states, "While continuing to attach importance to the building of the Army, the PLA gives priority to the building of the Navy, Air Force and Second Artillery Force to seek balanced development of the combat structure, in order to *strengthen the capabilities for winning both command of the sea and command of the air, and conducting strategic counter-strike*."[27] It is aimed at acquiring a blue water capability for the PLA Navy (advanced surface warships and non-nuclear attack submarines) to enable it to operate away from its bases for long durations. It is aimed at achieving greater strategic reach for the PLA AirForce employing modern fighter aircraft (SU-27s, SU-30s) and precision guided munitions (PGMs), airborne warning and control system (AWACS) for command and control, and air-to-air refuellers. It is also engaged in improving early warning capability through better reconnaissance, surveillance and target acquisition assets and better air defence, mobility and logistics support capabilities.

The PLA Army, with the lowest share of the defence budget earmarked for modernization, is working towards upgrading at least one infantry division in each Military Region to a rapid reaction division. Immense effort is being put in to acquire information warfare capabilities. A modern command, control, communications, computers, intelligence, surveillance, reconnaissance (C4ISR) system is being built virtually from scratch. At the same time, PLA is upgrading

its war-fighting doctrine and tactics, techniques and procedures and investing in the education of its officers. Emphasis is also being laid on acquiring capabilities for exploiting outer space for military purposes as well as dominating it through kinetic energy-based and directed-energy weapons. The development of strategic land-attack cruise and ballistic missiles is also being accorded high priority. Capabilities for airborne and amphibious operations are also being steadily enhanced.

The new doctrine calls for integrated, deep strikes to destroy the opponent's retaliatory capabilities through pre-emptive strikes employing long-range artillery, short-range ballistic missiles (SRBMs) and precision guided munitions. David Shambaugh writes, "Rather than conducting a 'people's war', the PLA doctrine of 'active defence' calls for forward positioning, frontier defence, engagement of the enemy at or over the border and potential engagement in conflict beyond China's immediate periphery. This doctrine is essentially pro-active and seeks to take the battle into enemy territory."[28] Beijing has defined the following five likely limited war scenarios:

(a) military conflict with neighbouring countries in a limited region;

(b) military conflict in territorial waters;

(c) undeclared air attack by enemy countries;

(d) territorial defence in a limited military operation; and,

(e) punitive offensive with a minor incursion into a neighbouring country.

Maj. Gen. Shen Xuezai, head of the Military Systems Department of the Academy of Military Sciences (AMS), has written, "Only by controlling the entire battle-space and striking at key points so as to paralyse the enemy's entire operational system and immobilize its forces, will it be possible to win a war."[29]

Anti-Access Strategies. China also follows 'anti-access' strategies to deny access to the adversary to his planned launch pads in an endeavour to prevent build-up of forces for a war against China. Planning for anti-access strategies flows from the apprehension that if superior, well-equipped forces (read the US and its allies) are allowed to arrive in the war zone with the force levels and in the timeframe planned by them, they are bound to prevail. The Chinese calculate that "by mounting a credible threat to do so, they will be able to deter the United States from intervening in the first place, or at least limit the scale and scope of that intervention."[30]

'Informationization' as an Asymmetric Strategy. According to a US Congressional Research Service report entitled "Cyberwarfare," authored by Steve Hildreth, China is developing a strategic information warfare unit called "Net Force" to neutralize the military capabilities of technologically superior adversaries. This new information warfare unit will "wage combat through computer networks to manipulate enemy information systems spanning spare parts deliveries to fire control and guidance systems."[31] Chong-Pin Lee, Vice Chairman of Taiwan's Mainland Affairs Council, says Beijing is redirecting its emphasis away from nuclear deterrence to this new asymmetrical strategy and its "overarching purpose is to deter the United States from intervening around China's peripheries, and to seize Taiwan with minimum bloodshed and destruction."[32] In another five to ten years, China will develop depth and sophistication in its understanding and handling of information warfare techniques and information operations. With India becoming increasingly dependent on automated data processing and vast computer networks, it too will become extremely vulnerable to such information warfare techniques. The fact that it can be practiced from virtually any place on earth even during peacetime makes acupuncture warfare even more diabolical. India can ill-afford to ignore this new challenge to its security.

Scope of Chinese Information Warfare. It spreads over a wide canvas– military, social, economic and political, and encompasses electronic warfare attacks, tactical deception, strategic deterrence, propaganda warfare, psychological warfare, network warfare, structural sabotage, trade warfare, and of greater significance, attacks on "human cognitive systems."[33] The Chinese have no compunctions whatsoever about employing dubious tactics, machinations, and subterfuge such as, "invasion of adversaries' financial systems through the use of computer viruses or human sabotage, disrupting enemies' economies, or spreading rumours over the Internet and thus psychologically impacting society."[34] China has an unparalleled experience in fighting cyber wars first against Taiwan in 1999 when Web sites on either side of Taiwan Strait became "high-tech battlegrounds" in a new kind of conflict,[35] and then against the US in April-May 2001. [36]

China's Vulnerability.[37] The most serious attack has been that of the Chernobyl virus, written by a Taiwanese computer-engineering student, Chen Ing-hao. The virus, released on the Internet, lay dormant until 26 April 1998, when it got activated and wreaked havoc on computers around the globe. It reportedly impaired 360,000 computers in China and caused damage worth $120 million, according to the official New China News Agency.[38] "The Guangzhou Military Region, which includes the South China Sea Fleet and the Second Artillery

units, was hit with a computer virus throughout its entire network linking 85 strategic and combat bases. In the morning hours of 26th April, the entire system was paralyzed. The Central Military Commission and the Headquarters of the General Staff had no alternative but to declare a state of emergency in order to mobilize the command system and military defences. The then President Jiang Zemin immediately placed the Nanjing Military Region and the East China Sea Fleet on second-degree combat readiness. This was the first time China's military entered a second degree combat readiness since the death of Deng Xiaoping in February 1997." After the incident, the State Council and the Central Committee Military Commission promptly ordered the formation of a task force which prepared detailed plans to cripple the civilian information infrastructures and financial, banking, electrical supply, water, sewage, and telecom networks of Taiwan, US, India, Japan and South Korea, should the need so arise.[39]

Accuracy 0f Assessment of China's Defence Policy. There are still many gaps in what is known about China's defence policy and military power. Not enough is known about China's actual military doctrine, command and control and capabilities such as logistics. There is much more that needs to be learnt about China's ideas of statecraft, its approaches to the use of force, its perceived vulnerabilities and its preferred operational methods, as well as about the political and military organisations that work on military assessments and plans. Although China's growing interest in coercion and preemption strategies and emerging methods of warfare – particularly the employment of missiles and information warfare – are now better understood, it is difficult to accurately assess how these developments will shape China's overall military intentions and strategy.

CHAPTER IV
TRANSFORMATION OF THE USAF

"Our country is being called on to accomplish three difficult missions at once. First, we must win the global war on terrorism. Second, we have to prepare for the wars we may have to fight later in this decade by making a number of long-delayed investments in procurement, people, and modernization. Third, we have to be prepared for the wars of the future. Therefore, we must transform the U.S. Armed Forces so that they can deter and defend against the emerging threats of the 21st century. Each of these three missions is critical; none can be put off. As we painfully learned on September 11th, 2001, our adversaries are already transforming. They

are watching us; they are studying how we were successfully attacked, how we responded, and the ways in which we may be vulnerable in the future. We stand still at our peril. If we do not identify our vulnerabilities, fix what is broken, and establish processes to enable innovation and adaptability—if we do not transform—our enemies will surely find new ways to attack us. In sum, transformation is not a goal for tomorrow; it is a fundamentally important endeavor that we must embrace in earnest today. Transformation lies at the heart of our new approach to defense. The development of transformational capabilities, processes, and forces will be given strategic focus under our defense strategy. The Department has distilled these into six operational goals as outlined in the Quadrennial Defense Review and addressed in this military transformation strategy. These six goals represent the operational focus for our efforts to transform the U.S. Armed Forces. The Department seeks to ensure that changes occur not only in the operating concepts we develop and the systems we acquire, but also in our military culture and the processes that drive investment decisions. As demonstrated by the superb performance of U.S. forces during recent combat operations, we are on course to transform our military into an agile, network-centric, knowledge-based force capable of conducting effective joint and combined military operations against all potential future adversaries. Over the long term, our security and the prospects for peace and stability for much of the rest of the world depend on the success of our transformation[40].

AK Cebrowski
Director, Office of Force Transformation, Office of Secretary of Defence

What is Transformation?[41] Transformation is a process by which the military achieves and maintains an advantage through changes in operational concepts, organization, and/or technologies that significantly improve its warfighting capabilities or ability to meet the demands of a changing security environment.

Why should the world's best military change? Transformation proves the effectiveness, efficiency, and flexibility of the US armed forces. The Department of Defense and the Air Force will not merely respond to changes in the global security environment, but rather will continually change to stay ahead of possible threats. The stewardship of this nation's defense requires hard thinking and hard choices about how to stay ahead of possible adversaries, and Transformation provides the framework to do so.

The Strategic Context[42]. There have been arguably two separate, but related, transformations of the US military over the past decade that will continue for the foreseeable future. The first is the transformation from an industrial age force to an information age force. Vast leaps in information technology in the areas of

intelligence and surveillance, command and control, as well as precision kinetic and non-kinetic weapons, are dramatically reshaping warfare. Before long, commanders will be able to see the entire battle space, identify key adversary centers of gravity, and rapidly communicate that information to friendly combat forces so they can use precision munitions to defeat an adversary by disabling its ability to operate, as opposed to bleeding it to death with mass attrition through sequential operations, or produce the effects of mass without having to mass forces (air, ground or naval). This approach would require the deployment of fewer forces (with enhanced rapid mobility), reduce the length of the conflict, and limit collateral damage. In the context of air and space operations, the keys to threat avoidance and applying the right force to the right place at the right time are the closely related concepts of parallel warfare and Effects-Based Operations (EBO).

The second ongoing transformation is that from a Cold War to a post-Cold War force. The military advantages America currently enjoys are in danger of eroding in the face of new, unique challenges in the post-Cold War security environment. The United States is therefore preparing for new forms of terrorism, attacks on its space assets, information attacks on its networks, cruise and ballistic missile attacks on its forces and territory, and attacks by chemical, biological, radiological, nuclear, or high-explosive (CBRNE)-armed adversaries. There is also a need to cope with the unique demands of peace operations, homeland security, urban operations, and low-intensity conflicts. To deal with this new security environment, where traditional concepts of deterrence may no longer apply, the US military is gearing up to be able to conduct operations effectively across the entire spectrum of conflict against a broad range of potential adversaries. Joint Vision 2020 addresses full-spectrum dominance across the range of conflicts from nuclear war to major theater wars to smaller-scale contingencies. It also addresses amorphous situations like peacekeeping and noncombat humanitarian relief.

In addition to developing capabilities, the Air Force has robust strategic planning, innovation, and long-term S&T processes in place to support the development of these transformational capabilities. It is creating flexible, agile organizations to facilitate transformation and institutionalize cultural change. The Air Force is transforming the way it educates, trains, and offers experience to its airmen so they understand the nature of the changing security environment and are encouraged to think "outside the box." The Air Force is continuing to transform into a capabilities-based force.

Revolution in Military Affairs. What constitutes RMA? A good definition of RMA can be seen in the one given by former Defence Secretary of the USA, William Cohen: "A revolution in military affairs occurs when a nation's military seizes an opportunity to transform its strategy, military doctrine, training, education, organisation, equipment, operations and tactics to achieve decisive military results in fundamentally new ways."[43]

Capabilities Based Air Force. Defining Concept of Operations (CONOPS) is a major innovation. By clearly defining how they intend to fight, USAF is focusing on its planning, programming, requirements, and acquisition processes on a capabilities – framework. Through the CONOPS, the USAF is transforming its planning process to make effects, and the capabilities needed to achieve them the driving force for all operational, procurement and budget decisions. There are six USAF CONOPS: Global Mobility, Global Persistent Attack, Global Strike, Homeland Security, Nuclear Response, and Space&C4ISR.

Transforming Transformation.[44] The US intends to provide leadership in a world where accelerating change and increasing ambiguity are dominant features, and where threats can adapt and evolve more rapidly than we are transforming. Our view of strategic response has been altered. Responsive means reactive – that we have ceded initiative to an adversary and are prepared to act in the wake of an attack. The President's National Security Strategy recognizes the consequences of a potential WMD attack, and therefore mandates that we be preventative. For example, if we are going to be preventative rather than just punitive, a change in intelligence capabilities is indicated. Clearly, we have to know more sooner. We must acquire the ability to better identify and understand potential adversaries. This calls for different organizations, different systems, and different ways of sharing intelligence. We need the ability to look, to understand, and to operate deeply within the fault lines of societies where, increasingly, we find the frontiers of national security.

CHAPTER V
NATURE OF FUTURE WARS

"Victory smiles upon those who anticipate the changes in the nature of *war"*

-Gulio Douhet

Since time immemorial, wars have been won by the side which created and exploited superiority over the enemy, be it in terms of sheer size of the armed

forces, superiority of the weapon systems, better tactics on the battlefield, or by exploiting a weakness of the enemy. Even in an air campaign, the most important prerequisite is to first establish superiority over enemy's and own airspace, and create a favourable air situation to facilitate unhindered prosecution of the war, be it on land, sea or in the air. Therefore, there is a requirement to create, train for and exploit a usable military advantage over our potential adversaries so as to create the requisite asymmetry in our favour.

Any future conventional war will likely be highly integrated, very dense, and of high intensity and tempo. Technological developments would have rendered the participants with enhanced firepower and lethality, improved tactical and strategic mobility, and numerous force multipliers. Battle in the plains and the desert sectors is likely to be characterized by an attempt at speedy break-in, deep thrusts, and destruction of enemy forces in an orchestrated battle of manoeuvre. Offensive defence and attrition would signify battles in the mountains. Offensives, in conjunction with short-range vertical envelopments and actions by specialized forces to augment offensive capability, are visualised.

The aerial battle space will extend across the entire country and would be totally non-linear. Air power is likely to be employed for Air defence of the country, destruction of the enemy's strategic targets and Offensive Counter Air Operations, besides Counter Surface Force Operations to facilitate rapid advance by our ground forces with reduced attrition and to support naval operations at sea. Future warfare will be intense and fast moving. Technological and doctrinal advances have allowed airpower to apply destructive force across a wide spectrum of roles, missions, targets, and effects at great ranges with ever increasing accuracy and under adverse conditions. The unprecedented improvements in reconnaissance and intelligence gathering capability together with introduction of sophisticated beyond-visual-range air to ground and air to air precision guided weapon systems have enabled the achievement of significant and dramatic effects in all types of weather and time-critical scenarios.

Expansion of the Battlefield. With revolutionary improvements in the reach of the weapon systems available and on the extent of surveillance and intelligence available, the present day battlefield has also expanded exponentially in all its dimensions: in terms of frontage, depth and vertically. It is said that we all are living in this expanded battlefield.

Non-Linearity of the Battlefield. Due to the limited time available, battle will have to be engaged in all three areas simultaneously. By doing so, we can

retain not only the most important surprise element, but also control the tempo of operations, disturb the enemy's command apparatus, and threaten his centres of gravity from a very early stage of the battle. Reduction of attrition of our own forces and maintenance of balance of our forces can also be achieved.

Concentration of Forces vs Firepower. Concentration of force at the point of decision is an important principle of war. In the last few years, layers after layers of ground obstacle systems have been erected by the enemy precisely with the aim of preventing such a concentration/rapid advance of our highly mobile and lethal strike forces. These obstacle systems would not only slow down our advances, but also stagnate our valuable attack formations inside enemy territory, thus providing high value military targets for employing all his firepower, including tactical nuclear weapons, if the enemy so decided. It would pay much greater dividend if the available firepower was concentrated at the point of decision rather than concentrating forces at the point of decision. This would call for our strike forces to remain tactically dispersed, get together for short durations of time to concentrate their firepower at the point of decision, and disperse again as quickly. Airpower is ideally suited for concentrating firepower at the point of decision, at the appropriate time.

Effects Based Approach. Precision strike has become a key element in all types of warfare. The aim of precision strike is to destroy a target with pinpoint accuracy, from maximum standoff distance, with maximum lethality, with minimum effort and at the right time. Time is very critical in case of time-sensitive targets, e.g., mobile launchers of SSM, armoured formations and aerial targets. In a fast moving and dynamic battle, destroying the target at the right time is as important as destroying it at all. With the increase in firepower and accuracy, and the airpower's ability to concentrate firepower directly on the enemy's centres of gravity, much greater 'effects' can be achieved much earlier in the campaign.

Synchronisation of Joint Combat Operations. In the modern short duration war that we are most likely to face, it is absolutely essential that all elements of national power be utilized to maximum advantage right from the beginning. The Indian superiority in terms of ground, maritime and aerospace forces needs to be brought to bear immediately so as to overwhelm the enemy with shock effect. Unlike in any of our previous wars, joint combat operations would assume a grossly higher level of importance. As seen in all the recent wars in the Gulf and Afghanistan, joint combat operations require extensive joint planning right from the beginning, joint training and synchronization of all operations.

Characteristics Of Conflicts in The 21st Century

Limited Wars. With at least 7 declared nuclear weapon states, and possibly a dozen more likely ones, and with the possibility of the nuclear umbrella being made available to members of various alliances, chances of major military conflicts appear to be diminishing. However, limited wars are possible especially if significant asymmetry exists between the two parties. The wars may be limited in terms of objectives, space, time, or force levels.

Likely Reasons. These wars could be due to any of the following reasons:

(a) Sovereignty based limited wars are possible in China – Taiwan, South China Sea, China - India etc.

(b) Key resource based, eg water scarcity.

(c) Hydrocarbon based limited wars in the Middle East, Central Asia, South China Sea etc.

Characteristics. Limited wars would have the following characteristics:

(a) Full Spectrum Dominance

(b) Simultaneous ops through various echelons

(c) Precision engagements

(d) Dispersed Ops and concentration of effects rather than forces.

(e) Effects based operations

(f) Network centric operations

(g) Battle space transparency

(h) Info war, cyber war and space war

(j) Highly mobile rapid action forces to intervene at short notice

(k) Pre emptive intervention

(l) Access Control / Access Denial

(m) Probable employment of miniaturized tactical nuclear weapons.

In the ultimate analysis, we need to be prepared for a wide bandwidth of conflict ranging from highly intense hi-tech local/limited wars to low intensity

conflicts and proxy wars. The region is also witnessing internal conflicts due to sectarian divisions, insurgencies and proxy wars. We are heading into an era of asymmetric threats and threats from other non-conventional sources, be they climate change, natural or human-induced disasters, water crisis, food crisis or pandemics.

CHAPTER VI
EFFECTIVE JOINT OPERATIONS

Dissonance. "Jointness" means different things to different people depending on the colour of the uniform. This is neither new nor restricted to Indian armed forces. We need to take note that even in the United States, "Service ways of doing things" have persisted for nearly two decades after the passage of the much admired Goldwater-Nichols Defence Reorganisation Act of 1986, indicating that the deep-rooted nature of Service cultures continues to affect jointness. Even military systems (like that of the United States) that have achieved extensive joint thinking, planning and employment of military power, continue to be stymied by differences among different components of military power, often leading to acrimony and sub-optimal performance[45]. Secondly, increasing specialisation in military forces makes it far more difficult to achieve in practice what in theory may look attractive. The dissonance could be due to honest professional differences as is the experience in the bulk of the cases, or due to institutional biases/loyalties (which military forces have to foster and guard zealously in order to build and exploit them to enhance combat effectiveness), lack of mutual confidence and trust among individuals and different components of military power (hence, the desire to keep capabilities and forces "under command") often arising from a lack of understanding of the role, limits and capabilities of each other, problems of institutional and individual egos, and so on[46].

Need for Trust. Lack of trust is another factor that creates problems for joint operations. Armies, influenced as they are by the emotions of close combat, have little faith in Air force operations beyond their visual horizon; and Air forces have traditionally suspected Armies of trying to control and/or nibble at their existence partly because all but a few Air forces grew from being integral components of the Armies (IAF being one of the few exceptions through the past 75 years). Gen. Charles A. Horner wrote about Operation Desert Storm:

"Trust was the key factor. Land, sea, air and space were all sub-elements of the overall campaign: there was no room for prima donnas. You need people schooled in their own type of warfare, and then you need trust in each other.[47]"

Reducing Inter-Service Tensions. Winning the next war jointly requires that we identify at least the major areas of professionally divergent thinking and inter-Service tensions. Some are examined here to illustrate the principles on which to deal with them. The (US) Army and Air Force experience the greatest inter-Service tension over the relative roles and limits of the boundaries of ground and airpower in war-fighting. This tension largely results from how the joint doctrine designates areas of operation (AOs) and how the army views deep operations. This, in turn, raises the conceptual issues regarding coordination boundaries between air and ground forces. Land forces have tended to acquire weapons with increasing ranges and lethality and acquire a justifiable interest in what happens over the horizon and what has come to be known as the "deep battle" in hostile territory, well beyond the traditional "bomb line" of the ground battle which normally coincided with the range of artillery guns, that is, out to about 25-odd km from the contact line.

Relative Roles in Joint Operations. By their very nature, Air forces are more effective as a force to conduct military operations well beyond the contact battle as compared to the ground forces. The experience of recent wars indicates that a shift has taken place in the relative war-fighting roles of ground and air power. The primary role of the Air force in respect of the *joint war-fighting* would be to shape the battle space at the operational and strategic level, besides conducting counter-surface force operations and performing other roles like ISR, airlift, etc. The crux of success of joint war-fighting is that both the land force commander and the Air force commander must accept that the roles and effects created by each component lead to maximising war-fighting effects within the bounds of land and airpower capabilities. A recent seminal study by RAND[48] concluded the following:

(a) The principal role of the land forces would be to employ their overwhelming tactical dominance to:

  (i) "force enemy reaction at the operational and strategic levels by forcing concentration and/or movement, thus making them vulnerable to air attack; close with and finish enemy tactical remnants, exploit success and seize and hold ground;"

  (ii) "deal with the post-conflict security environment until the desired strategic political end-state is achieved."

(b) Air power's role, according to this study, should be to:

(i) "shape the theatre at the operational and strategic levels" ;

(ii) "provide close air support (CAS), intelligence, surveillance, and reconnaissance (ISR), and airlift to facilitate ground combat operations";

(c) The principles apply in respect of the naval environment possibly with greater effect since the protection provided by camouflage, dispersal and other survival strategies is not available at sea, making naval assets more vulnerable to hostile airpower. A close coordination between the shipborne combat air assets of the Navy and the shore based air assets of the Air force are vital for their effective contribution to the national effort.

Need for Air Dominance. Another perennial issue is the over-riding need for the Air force to dominate hostile Air forces. The war in the vertical dimension has to be fought and won by the Air force by its own means, and air dominance would remain its preeminent role and mission to provide the environment for war winning. But air dominance, in both air-to-air and air-to-surface superiority roles, would provide enormous freedom of action for ground and Naval forces to conduct operations they are best suited for, while undertaking strategic and operational level air strikes and support missions contributing to the war-fighting capabilities of surface forces.

However, we must note that the study and experience of the US military in war-fighting since the end of Cold War (Gulf War 1991, Bosnia 1995, Kosovo 1999, Afghanistan 2001, Iraq 2003-) has been against enemies that did not possess credible airpower, except for Iraq in 1991, which was rapidly neutralised by the far superior US air power. The clear lesson is that the above recommendations assume total command of the air. In our case, this is not likely to be so, and the command would have to be contested. Hence, the role of seeking and achieving "air dominance" would be a prerequisite to the ground and air power roles outlined above. Incidentally, winning a war through "command of the air" is now the official policy and strategy of China as per the White Paper on National Defence 2004.

CHAPTER VII
TRANSFORMING THE IAF

With the capability of operating in an expanded envelope, and the kind of technologies in use, the term "airpower" was replaced by the more appropriate "aerospace power" with a significantly enhanced role in any future war due to the profound change in its inherent characteristics of speed, reach and flexibility. In our context, there is a firm belief that the next war will be "air led", and that the end result will be contingent on what aerospace power is able to achieve.[49] Clearly, given our situation, concerns and aspirations, a strong and comprehensive aerospace capability is an inescapable necessity. As already discussed, the Air force has the characteristics of being a strategic force, with strategic reach, quick response and capable of achieving strategic effect[50].

Strategic Effects. With a high possibility that future wars will be limited wars, it is essential that the necessary strategic effects are achieved within this limited timeframe, adequate for influencing the enemy's behaviour to any significant degree. The challenge under these circumstances is: how to apply coercive force, leave alone punitive force, to achieve the effects necessary to alter the enemy's policy choices? Such coercive force beyond the contact battle, by definition, would have to be undertaken by airpower, both by the combat component and, in some circumstances, by special forces relying on the airlift component of airpower. Conceptually, the Air force would be the appropriate instrument to apply coercive/ punitive force, by itself in some cases, or in concert with ground and naval forces.[51]

Air Dominance. The only serious challenge that Air forces have to contend with in the air is that posed by the enemy Air forces, which in principle could possess similar or better capabilities. And air dominance cannot be exploited to its intrinsic advantages unless the hostile Air force is subdued or, ideally, eliminated from being a factor in war. In other words, building IAF's air dominance capabilities is critical to winning strategies of not only the war in the air, but more significantly, the war on the ground and at sea. IAF's strategic reach has been expanding and this naturally implies expansion of the battle space. In turn, this would demand enormously expanded intelligence and RSTA capabilities if the attributes of air dominance are to be effectively exploited. But at this point in time, while we aim for building future capabilities, air dominance in our case would have to be contested, perhaps even from a position of disadvantage (if we are unable to restore the airpower balance vis-à-vis China). Given the ongoing military modernization and the unambiguous priority that China and Pakistan (since 1999) are giving to rapidly building their Air forces, the decline in the force level would have to be

arrested on the highest priority before we can seriously address the issue of enhancing IAF's capabilities.

Deterrence. The armed forces must be prepared for all contingencies throughout the spectrum of conflict. In fact, the readiness to conduct warfare, whatever be the nature and extent of the war, is a determinant of our deterrent capability. Logically, air dominance capabilities should be planned for in peace-time, since existential air dominance capabilities provide a powerful conventional deterrence capability. They would then confer a definitive competitive advantage in case of deterrence failure, enhancing the credibility of deterrence.

Capability Based Planning. Military thinking tends to focus a great deal on capabilities, both our own and those of the potential adversary. Capabilities by themselves do not result in winning wars; their optimum exploitation does. The greatest challenge in peace-time force planning for war winning is to acquire appropriate capabilities for force employment in war. In other words, creating optimum synergy between concept (and doctrine) and capability is central to winning future wars. If aerospace power can do all that and we need it in all its capabilities, it is obvious that we must possess the necessary tools. Our long-term perspective plans for modernization must reflect these requirements so that we have the appropriate and adequate capability vis-à-vis possible adversaries. We need a time-based capability creation plan. While a 20 year perspective plan is necessary, a focused plan to achieve a credible capability by 2022 should be implemented on priority in view of the capabilities being built up in our neighbourhood in this timeframe.

Roles and Missions of the IAF

(a) Roles of the Air force could be defined as:

  (i) Protection of the aerospace over areas of interest to the Indian State, and

  (ii) Exploitation of the vertical dimension to shape the employment of national power in pursuit of national goals[52].

(b) Missions of the IAF could be:

  (i) Air Defence. Air Defence of the nation's airspace is IAF's primary responsibility. With the enhancement of our national interests, it has now expanded beyond the homeland and island territories, to the sea lines of communication (SLOCs), energy and trade interests, in a steadily increasing circle of influence. Threat from SSMs and ballistic

missiles has since increased. Surface-to-air guided weapons form a formidable part of IAF's defensive weapon inventory to protect our national vital areas/points of strategic, military and economic significance. Surface based long range sensors and weapon systems need to be restructured to counter advent of technology and enhancement of reach, lethality and precision strike capability of our adversaries. Space based sensors would be required to provide early warning regarding launch of SSMs and ballistic missiles. Kinetic and directed energy weapons would be required to counter future weapon systems. All the AD sensors and weapon systems should be integrated into the network-centric environment to enhance their efficacy, to prevent fratricide and enable effective unitary responsibility.

(ii) Defence of Space Assets. Our reliance on space assets during war is bound to increase. The dependence on space in both the military and civilian domains also implies that we are becoming increasingly vulnerable to interference with our space assets. Such dependence demands defensive capabilities and, if possible, offensive capabilities to deter our adversaries from inimical designs.

(iii) AWACS and C2 aircraft would provide the requisite early warning and command and control to counter airborne threats over the entire airspace of interest to the country.

(iv) JSTARS would provide the requisite ground situation and target information to enable effective effects based tactical operations.

(v) Strategic Precision Strikes deep into enemy territory in a parallel manner right from the beginning to provide the desired effects.

(vi) Advanced Intelligence gathering, analysis and timely dissemination to enable decision-making (including IMINT, ELINT and COMINT).

(vii) Facilitating Counter-terrorism using UAVs, UCAVs and other platforms with precision capability.

(viii) Cyber Warfare.[53] Cyber warfare would in the future become key to successful prosecution of all other missions. In a discussion of aerospace operations, Dr Lani Kass, special assistant to the USAF Chief of Staff and a renowned expert on cyberspace stated, "If we don't dominate cyberspace, we won't be able to dominate air, land or sea domains.[54]

The task will be to conduct sustained operations in and through cyberspace, fully integrated with air and space operations."

(ix) Traditional Tasks. The other existing tasks are counter-air operations, counter surface force operations, reconnaissance, interdiction, transportation of men and material, casualty evacuation and a number of off-shoots of these basic tasks.

(x) Projection of Presence. Projection of Indian interests, a new role, requires long-range presence, persistence, and forward basing arrangements at other than on our island territories. The projection envisaged would be no more than in the form of joint exercises, a benign presence and assistance to friendly nations in their contingencies, training etc. Such initiatives would have to be in conjunction with diplomacy. Wherever feasible, this would be the best way to achieve our goals.

(xi) Operations Other than War. With a steep increase in non-military threats, the need is greater than ever before, to contribute to nation building, disaster management, mass evacuations etc. Requirements need to be assessed, capabilities built up and kept ready in a focused manner. A plan needs to be worked out with civil aviation and kept ready to cater for situations requiring rapid augmentation.

(xii) Air Expeditionary Wing. Under the *Defence White Paper 2003-2004*, the RAF has chosen to move away from an emphasis on having main operating bases in the UK supporting forward deployments, in favour of operating with a much more expeditionary focus along the lines of the USAF Air Expeditionary Force concept. With an aim to create a balanced Air force capable of deploying overseas and sustaining its operations for a specified period of time, RAF has created nine expeditionary air wings[55]. IAF should create at least one Air Expeditionary Wing immediately on a pilot basis, followed by necessary augmentation.

(xiii) Off-Base Operations. It is becoming quite evident that runways required for operating fixed wing aircraft will be targeted by a variety of weapons on day one of the conflict (pre-emptive). IAF should start considering procurement of STOVL fifth generation combat aircraft and development of compact fortified bases to overcome this problem and maintain a credible combat capability.

Need for Transformation. So far, IAF has been primarily focused on the threat from our western neighbour, with a cursory thought about the threat from the North. The IAF's inventory has shrunk to its smallest size in close to four decades. While the combat aircraft strength has dwindled to precarious levels, the ground based AD Systems have become obsolete. The airlift, helilift and attack hepter capability are inadequate. There is a shortage of officers and technical air warriors. Induction of upgraded and new systems is progressing at a slow pace. Modernisation taking place at the moment is grossly inadequate, both in terms of scope and timeframe. With much bigger and more numerous threats, it is essential that we transform to a capability based Air Force and bring about revolutionary changes if IAF is to meet the challenges of tomorrow. A Revolution in Military Affairs was aptly defined by former Defence Secretary of the USA, William Cohen: "A revolution in military affairs occurs when a nation's military seizes an opportunity to transform its strategy, military doctrine, training, education, organisation, equipment, operations and tactics to achieve decisive military results in fundamentally new ways."

Strategy for Transformation. The following strategy is suggested for implementing transformation:

(a) Project Aerospace Force 2022. A dedicated Directorate needs to be set up at Air Headquarters to address all issues pertaining to transformation of the IAF with time bound targets, with reviews by VCAS at six monthly intervals and review by the CAS on an annual basis. Its task should include laying down the overall philosophy, concept of operations, regular scan of the threat environment, procurement plans, co-ordinate effective and timely procurement and effective induction of weapon systems, manning and training requirements including ensuring that suitably trained personnel are made available, make technology requirement projections, and co-ordinate development/procurement of such technologies through DRDO/private sector/Air Force Research Labs. A sub-directorate should be set up to generate, develop and promote innovative ideas.

(b) Flight Plan for Transformation. Transformation is usually confused with modernisation. It is necessary to understand that modernization is only a subset of transformation. To ensure that all the constituents of transformation are carried out, a comprehensive Flight Plan with detailed time-bound roadmap is necessary to be prepared, and progress monitored at regular intervals at different levels. Preparation of the Flight Plan should be

undertaken by the Directorate of Transformation. All the components of the Flight Plan should be discussed at different levels before finalization.

(c) Shift from platform-centric planning to adaptive capabilities and effects-based planning based on Air Force's Concept of Operations (CONOPS).

(d) Create flexible and agile organizations which continually collaborate to facilitate transformation and institutionalize cultural change:

(i) Set up a separate Directorate at Air HQ for focusing on and driving Force Transformation in a time-bound manner.

(ii) Establish a specialist organization consisting of specialists from TACDE, ASTE and CAW tasked to prepare the necessary doctrines and training patterns, and implement training of a pilot task force.

(iii) Undertake a pilot project in one airfield in every command so as to absorb the technologies and try out the doctrines and tactics for their effective absorption.

(iv) Air Expeditionary Force(AEF). A special Air Expeditionary Wing should be designated. This Wing should have all the necessary components including a designated AEF commander, special forces transport element, Air-to-Air refuellers, AWACS, Air Dominance elements, Forward Air Controllers, special security, logistics, administrative elements and long range secure communication systems. Extensive joint training with Army and Naval special forces and training with other Air forces should be carried out.

(v) Air Force Research Labs. IAF needs to set up Air Force Research Labs to take up a few specific state-of-the-art projects on a fast track. These labs should be manned by uniformed and civilian scientists, under the functional and administrative control of the IAF. It could be headed by either of them. A senior scientist each from DRDO, CSIR, IIT along with ACAS (Plans) could be on the Governing Council. For a start, ASTE and one of the BRDs could be designated as AFRLs. The AFRLs should also evolve into technology think-tanks for the IAF.

(d) Changes to Organisational Structure

(i) ACAS (AD). As IAF is responsible for Air Defence of the country, it is necessary that the senior officer in charge of AD at Air HQ should be at least of AVM rank.

(ii) ACAS(ASR). Considering the quantum increase in the capital procurements, PDASR needs to be upgraded to AVM rank, and all capital procurements consolidated under him.

(iii) ACAS(IC). International co-operation is already receiving the attention that it deserves. The subject needs to be dealt with by a dedicated Directorate headed by an AVM/Air Cmde.

(iv) Systems Command. All specialist establishments like ASTE, SDI and the suggested AFRLs should be clubbed together under one command to provide focus in this important area.

(e) Innovation. Aggressively pursue innovation to lay the groundwork for transformation. Transformation requires innovative thinking and a process to identify, examine and convert bright ideas into reality, whether it is a new / improved technology, concepts or a new way to organize.

(f) Battlefield Airwarrior(BAW). In the future battlefields, there will be a need for a specially trained battlefield airwarrior, who will be air dropped along with expeditionary/special forces, to perform a variety of battlefield functions such as combat rescue, forward air control including target designation, combat weather etc. The BAW has to be a highly specialized, highly fit, highly motivated and a highly trained airwarrior with an ability to operate independently using state-of-the-art electronic gadgetry. During major disasters also, the BAW could be heli-dropped at various spots in the disaster zone to coordinate the air relief effort including providing weather updates and controlling the hepters.

(g) Human Resource Development. The most valuable resource is the Airwarrior. They are the ultimate source of aerospace combat capability. The service's first priority is to ensure that they receive precise education, training and professional development necessary to provide them a quality edge second to none.

(h) Leadership Development Programme. Preparing Airwarriors for leadership is essential for transforming the Air Force, which can be accomplished only

through an integrated and deliberate approach to leadership development. A scientific selection and grooming programme would need to be put in place. Strategic leadership and decision-making will be the key to success in any future war/contingency.

(j) Intellectual / Professional Enhancement. A think-tank like CAPS should be effectively utilized to develop/refine ideas/concepts on all aspects of effective development and employment of aerospace power. Regular unclassified/ classified workshops need to be held with participation of a large number of middle level leadership of the IAF.

(k) Maintenance Philosophy

(i) With the increasing sophistication of the equipment being operated, there is a need to implement a philosophy of zero-tolerance to systemic and human errors in maintenance.

(ii) The large pool of specialist manpower retiring each year should be reemployed in BRDs and in static second-line maintenance tasks.

(l) Professional Qualification. With the increasing technological sophistication of all equipment being inducted into the IAF, be they airborne platforms, weapons, radars, or communication equipment, it is essential that the personnel operating these equipment, including aircrew, be technically qualified, preferably engineers in the officer cadre. The Indian Navy is already considering an all-engineer officer cadre. Selection and training pattern would need suitable modification.

(m) Effective Utilisation of Engineering / Specialist Expertise in the IAF
Being a highly technology-intensive service, IAF trains the specialists very well. Some of them evolve into super specialists. Many of them undertake projects in DRDO or become flight testing specialists. All of them are few of a rare breed. But in many cases, they are moved out to non-specialist posts, due to routine posting policies. Their expertise not only gets wasted; IAF pays a heavy price as suitably qualified replacements are not available. Many IAF projects suffer setbacks in DRDO and HAL. A drastic change of policy is required.

(n) Role and Modernization of Meteorological Department. One of the major non-military threats to our security is climate change. The number of extreme climatic phenomenon is increasing rapidly. With meteorology having an important impact on aerospace operations, IAF needs to consider setting up

State-of-the-Art Met facilities, including weather monitoring and research aircraft, and an ultra modern Met Ops Centre, with real-time weather monitoring and prediction capabilities in our strategic neighbourhood (including inputs from international weather channels).

(o) A workshop should be held for ministers, parliamentarians and senior bureaucrats to sensitize them on the new concepts of employment of military capabilities in the furtherance of national goals.

(p) Policy Formulation Procedure. Any new draft policy should be put on the IAF Net, publicized, views asked for, discussed with as many stakeholders as possible and then finalized for issue.

Administrative and Social Issues

(a) Revised Trade Structure. The trade structure should be revised to reflect the combined trades in vogue. Certain trades like MTD, Cat/Asst, ACH/GD, Clk/GD etc should be withdrawn from Airmen cadre and filled by NCs(E), with some promotional avenue.

(b) Discussion / Suggestion Forum. An open forum should be established in an internal net to enable free exchange of suggestions, innovative ideas etc regarding any matter of interest to Airwarriors, be they technical, social or whatever. A small dedicated team should monitor these suggestions and follow up wherever necessary.

(c) Education. The AF Schools have over a period established a good reputation for the quality of education. But they are perpetually short of seats. IAF should consider expanding them so as to enable children from the surrounding areas to attend, and be a Centre of Excellence in the region. This will be a good contribution to society. The non-public funds should be effectively utilized to set up facilities of educational excellence primarily for the benefit of children from the services, and also for the society at large.

CONCLUSION

India is located in a hostile neighbourhood. With India emerging as an economic power and a competitor for scarce resources of energy, water and food, with a significant unresolved border dispute pending for long, and the rapid

modernization of Chinese armed forces, conflict potential between the two not-very friendly neighbours is fairly high. India needs to build up her military capability to cater for such a scenario.

Aerospace power is an increasingly vital part of that military power. Aerospace power, as we well know, is premised on cutting-edge technology; in fact, it even determines the direction of technological advancement. Recent developments have endowed aerospace power with unprecedented force enhancement, be it in reach, accuracy, carrying capacity or precision. It enables effect-based operations and can create strategic effects. It offers a solution in almost any situation, in peace, or in the many shades of conflict. Aerospace power has become an "instrument of choice". In the major conflicts of the last two decades, USAF has demonstrated the devastating war-winning capabilities of aerospace power.

In a fluid, limited war or non-conventional war, we cannot wait till we have adequate information or all the desired resources before we take action. Speed of action will not only be desirable but essential. We will have to manage uncertainty. Traditional forms of combat could also give way to non-traditional combat. The inherent flexibility of aerospace power would need to be put to good use. Aerospace power's precision, lethality, and ability to paralyze an adversary is at an all-time high. Aerospace power with precision weapons gives us a war-winning strategy for the future. Only aerospace power can threaten every enemy's leadership, infrastructure, military, and national will on day one of the conflict.

At present, IAF is experiencing low inventory levels and obsolescence of her combat equipment. While modernization is an ongoing process, IAF needs to transform herself so as to have the necessary strategic reach and persistence, and be able to effectively contribute to the handling of the future geo-strategic and geo-economic compulsions. A broad plan for such a transformation is proposed. However, a much more detailed and classified plan needs to be worked out for actual implementation.

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DRIVERS FOR INDIAN MARITIME STRATEGY IN 2025

By
Cmde AK Chawla, NM

INTRODUCTION

The aim of this dissertation is to determine the Contours of an Indian Maritime Military Strategy for 2025.

Hypotheses

This study is based on the following hypotheses:

(a) By 2025 India will be the world's fourth largest economy[1] with significant dependence on the seas for: economic growth and well-being (trade, energy and food security); national security (defence of maritime interests, deterrence and power projection); and international obligations (global/regional stability and balance of power); thereby making the Indian Navy (IN) a key national instrument of national security.

(b) In order to meet the geo-strategic imperatives arising out of this development, the IN will have to refine its current maritime military strategy by: acquiring and enhancing capabilities for credible deterrence (strategic and conventional); power projection capability; ability to combat non-state actors and asymmetrical warfare; developing strategic partnerships with selected regional and global navies; greater contribution to regional and global stability; and leveraging technology in support of its strategy.

Background

The Maritime Strategy of a nation can be defined as the overall approach of a nation to the oceans around it, with the aim of synergizing all aspects related to maritime activities to maximize national gains. A maritime strategy would thus have economic, commercial, political, military, scientific and technological facets and will be influenced by the country's overall National Grand Strategy. The

military dimension of India's Maritime Strategy is termed the Maritime Military Strategy.[2] The objective of enunciating a Maritime Military Strategy is to provide the overarching rationale for the creation and utilization of maritime capabilities during peace, crisis and conflict.[3]

The IN first attempted to articulate a maritime strategy in 1988, but probably due to the in-house nature of the effort, no follow-up document emerged. It was only after the publication of the Indian Maritime Doctrine in 2004 that the first credible attempt to enunciate a maritime military strategy was made, and *Freedom to use the Seas: India's Maritime Military Strategy (2006)* was made public in 2007. Among the major aims of releasing the document in the public domain was: to ensure transparency of intentions and thereby generate trust and confidence in the international community regarding the intentions of the IN; and to provide the document the 'oxygen' of domestic (and international) comment, discussion and debate, which in turn would assist in refining future versions of the strategy.

It needs to be remembered that any strategy is fashioned in the context of a given politico-military situation and within the ambit of an overall set of interests and objectives, and is therefore time sensitive. In keeping with this reality, the 2006 strategy acknowledged that, "…it would be valid only for a finite time-frame and will be re-visited and revised to keep it contemporary and relevant".[4] This study, examines the seminal geopolitical, geo-strategic, geo-economic, nature of warfare and technological drivers that are likely to exist by the end of the first quarter of the 21st century, in order to foresee the strategic circumstances likely to exist in that period. Based on this anticipated scenario, the study then outlines the contours of the maritime military strategy that would need to be fashioned by the IN to meet the challenges likely to then exist. In the end, a comparison between the maritime strategies followed prior to 1990, in 2006, and the one envisaged in 2025, is carried out to show how maritime strategy shifts in response to changes in the international environment.

Predicting the future is a hazardous and uncertain exercise, but one that is very necessary. Particularly for an armed force, looking ahead is crucial to ensure that its manpower, equipment and training are relevant to the needs and challenges of the time-frame in which they are going to operate; more so because modern weapon platforms require a lead time of at least 10-15 years from their conception to their induction. It should not be forgotten that in war, obsolescence of strategy and equipment does not just carry the risk of failure and defeat, but the very survival of a country.

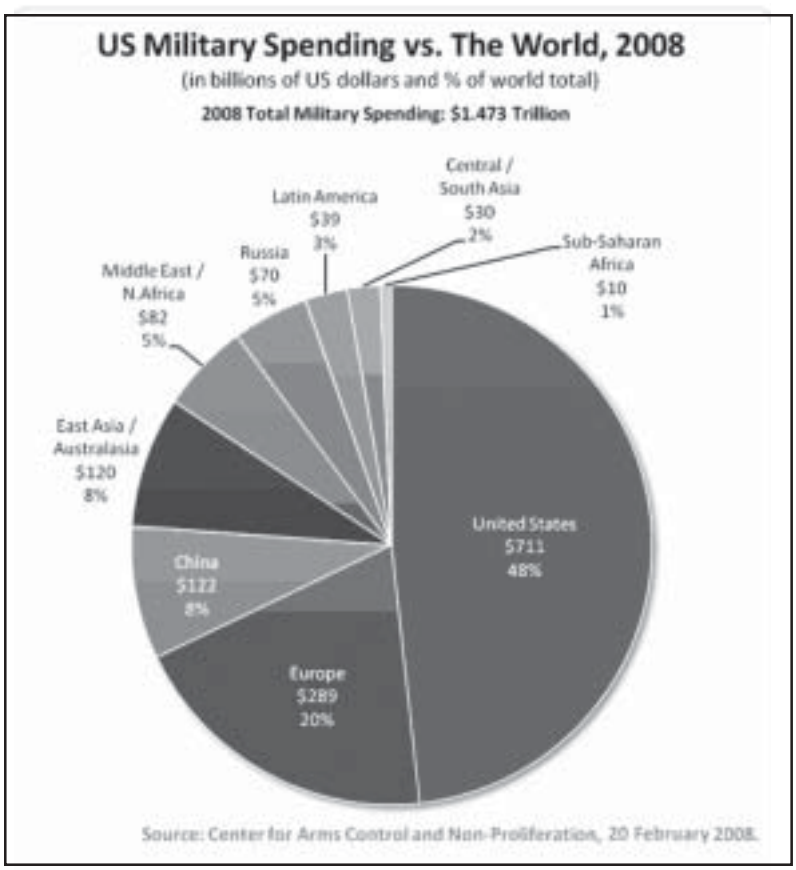
The study first examines the geopolitical drivers that are likely to exist in 2025.

CHAPTER I
GEOPOLITICAL DRIVERS IN 2025

The US-led unipolar world, which emerged after the end of the Cold War, is today undergoing a flux. The terrorist attacks of 9/11 led the US to engaging in a war, which was first limited to Afghanistan, but then expanded to Iraq, and has subsequently become open-ended. The seven years since then have not just sorely tested US resolve and severely strained its treasury but also threaten to portend the end of Pax Americana.

US Nobel Laureate Joseph Stiglitz has estimated that the Iraq War has already cost the US between US$ 3-5 trillion[5], apart from the loss of over 4,000 personnel.

Figure 1



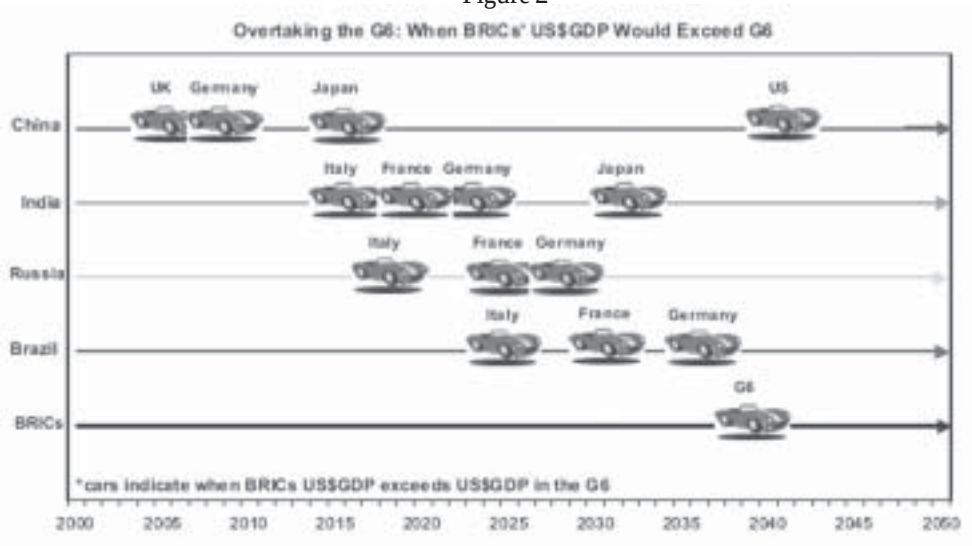
More importantly, they have diverted the country's monies and attention from development priorities within the US, eroding its lead over its competitors.

Internationally, the conflict has weakened the standing of the US as a moral force, and given a boost to its rivals. On the flip side, the record defence expenditure[6] has further increased the already vast military gap between the US and other major powers, and today it has no peer competitor in the world. It also remains the leader in many areas of advanced technology.

As the US economy has weakened, others have become stronger. The fact that the US has lost key industries, has a plummeting savings rate and is increasingly in debt to Asian central banks, is all reflected in the falling value of the US dollar, which is no longer the uncontested world currency. This has led some analysts to believe that we are living in a 'post-American world'.[7]

China today is the country most likely to rival, but not succeed, the US as a Great Power. As per various analyses, China will surpass the US to become the world's largest economy between 2040-2045[8]. China's phenomenal economic success is reflected in its foreign exchange reserves of US$ 1.8 trillion of which over US$ 600 billion are held in US Treasury Bonds. Asia's rise is not unprecedented – in 1820 it comprised 60% of the world's GDP. Colonisation reduced Asia's share to only 20% in 1985. This has recovered to 40% in 2008 and is expected to reach 60% again by 2050, when three of the world's four largest economies – China, India and Japan – will be in Asia.

Figure 2



Goldman Sachs BRICs Model Projections, 2003

China's rise is already spurring immense speculation about the direction that it will take. Will it be peaceful, as China affirms, or will there be turbulence traditionally associated with the arrival of a new power? China's stated intentions and its actual behaviour since its economic liberalisation began in 1979, offers clues to its future attitude. According to China's strategic plans, it is likely to be a developed country only by 2050. Chinese experts state that Beijing wishes to achieve this status while observing three 'transcendences'. The *first* is to transcend the old model of industrialisation characterised by wars and rivalry and instead forge a new path based on technology, economic efficiency, low consumption of natural resources and low environmental pollution to build a 'society of thrift'. This is patently not happening. China is one of the most materialistic and polluted countries in the world today and is sourcing and consuming the world's resources in an increasingly voracious manner. The *second* is to transcend the old model of emerging powers and strive for a 'peaceful rise' (now 'peaceful development'). This strategy has held so far, though its relations with major Asia-Pacific powers, especially Japan, the US and India, have periodically come under strain due to various reasons. Its unprecedented military build-up over the past two decades also belies its peaceful intentions. The *third* is to transcend outmoded modes of social conduct and to construct a harmonious social society. However, Chinese society today is more capitalist than socialist.[9]

The growth of Chinese nationalism[10] has been a notable feature of China's rise and has deep roots stretching back to the indignities foisted on China by European colonial powers, American missionaries and Japanese invaders from the 18th to mid-20th centuries, a period now officially referred in Chinese textbooks as "the century of shame and humiliation". The current hyper-nationalism is also fuelled by deep feelings of discontent and resentment currently gripping large sectors of Chinese society – stagnant incomes, unemployment, inflation, corruption, severe class disparities, environmental deterioration, moral vacuum and a deep sense of losing ground in China's Hobbesian economy.[11] It also suggests that nationalism has replaced Marxism as the legitimating credo of China's rulers[12] and that the government is seeking to divert social frustrations into nationalism, and away from the Communist party-state, which could have unforeseen consequences.

For India, China's rise has not yet translated into significant progress on the boundary issue[13] in spite of the quantum increase of bilateral trade from US$ 2 billion in 2001 to US$ 38.5 billion in 2007 (expected to reach US$ 60 billion by 2008-09)[14] and India's conciliatory stance over Tibet despite China's violent

crackdown. China has also continued to support Pakistan's nuclear and missile programme, maintaining its strategy of trying to tie India down through its surrogate. It has also built defence relations with most of India's neighbours, possibly to ensure that India does not challenge China's predominance in Asia.

Spiralling oil prices have helped revive *Russia*'s fortunes in recent years, giving it a GDP growth rate of over 8%.[15] Oil and gas reserves have also given it strong influence in Central Asia and Europe. However, in areas of technology and military strength Russia has stagnated. Its absence of soft power and declining population, which is expected to fall to 108 million by 2050 (from 138 million today) precludes it from regaining great power status. The 2008 Russia-Georgia conflict notwithstanding, the fact that the US today can contest Russian influence on its immediate periphery is a telling sign of the decline of Russian power. Not surprisingly, Russia sees itself as only one of the poles in a future multipolar world and envisages playing a 'balancing' role in the international system.[16]

Russia has strengthened its ties – both defence and economic – with China over the past decade, partly in response to aggressive US-led NATO expansion, and partly due to the necessity of building relations with a neighbour who will soon outstrip it on all counts. However, the relationship has too many complications and history for it to develop into an alliance of any significance.

The *European Union* (EU) has been a key global economic power for many years. It now seeks to be a major global player in the defence and security field as well. In 1999, the EU had adopted a Common Security and Foreign Policy (CSFP) and appointed Javier Solana as its High Representative for the CFSP, thus answering Henry Kissinger's famous question, "Who will answer when I call Europe?" The subsequent promulgation of the European Defence and Security Policy (EDSP) in 2000, along with an expeditionary capability, has enabled the European Council to authorise over 20 peacekeeping and peace enforcement operations, from the Former Republic of Yugoslavia to Afghanistan, over the past seven years. The EU has also firmed up military arrangements with NATO[17] under the 2003 "Berlin-plus Agreement" – and a phrase aptly used to describe their relationship is 'separate but not separable'.

The EU faces significant challenges in achieving its stated goal of 'strong and effective multilateralism', exemplified by the recent rejection of the Lisbon Treaty by Ireland (which sees its charter as being neo-colonial). Once all the envisaged foreign policy and military arrangements are in place, the EU would be a force to reckon with. However, its leadership role will remain constrained by the different pulls of its constituent countries and it will tend to act largely in concert with US policy.

Projection of Current Geopolitical Trends to 2025

While exact predictions are never easy to make and can prove to be unreliable due to the emergence of new factors, clear trends of the 'balance of power' by 2025 are available from the analysis attempted above. The world is moving from a unipolar world to a multipolar world order, with the US and China being the most dominant poles. The EU, Russia, India, Japan and Brazil will be the other major players in the global order.

While the US will no longer be the sole superpower, it will remain the most powerful and influential state in the world, economically, politically, militarily and culturally. It will also retain its global leadership role since other major powers, especially China, have traditionally shied from taking the lead on any global issue. However, by 2025 it would be hard pressed to retain its pre-eminence.

China will be the other major power in the world, possessing global economic reach and clout, but with military power limited to the Asia-Pacific region. The big question, which does not have any ready answer, is the fate of its monolithic Communist government, which is totally incompatible with its capitalist economy. If China manages the transition to some form of representative government, its soft power and appeal will grow exponentially – if not its global influence will remain limited.

Russia will remain a key balancing power, but its leverage would be limited to the use of its oil and gas reserves and sale of military equipment. The EU and Japan will remain formidable economic and technological powerhouses. By 2025 the EU would have moved closer to the type of integration envisaged under the Treaty of Lisbon and thereby its foreign and defence policy would be much more effective, especially in Europe and Africa, but with its freedom of action circumscribed by its multinational nature. Brazil's influence too will grow, but will essentially be limited to the South American continent.

In terms of groupings, due to the uncertainty associated with change, old alignments and alliances will get stronger. The US-Europe and US-Japan compact will be further strengthened in the face of China's emergence and a neo-Czarist Russia. In maritime terms, this would translate into giving the North Atlantic and Mediterranean to allied navies to patrol, while the US Navy concentrates on competition from China in the Pacific[18]. New security alignments in Asia – principally centred on the US, Russia and possibly India – could emerge if China is perceived as a security threat. This perception will depend on China's behaviour

on issues such as Taiwan and the South China Sea dispute. Russia, more out of necessity than any genuine liking will be proximal to China, though it will retain close linkages to some European powers and with India. What then is India to do?

India's Geopolitical Outlook in 2025

India's geopolitical outlook has changed for the better after the end of the Cold War due to the removal of constraints imposed on her strategic autonomy in a bi-polar world. Not surprisingly, the post-Cold War era has seen significant enhancement of her relations with the rest of the world. By 2025 besides being the fourth largest economy in the world, India will be a global centre of soft power, a significant possessor of hard power, and a leader in many fields of technology. Due to its unique attributes, it will be seen across the world as a 'bridging power'[19]. India would have also assumed a leadership role in the Indian Ocean Region (IOR), assisted in no small measure by US encouragement[20], driven in part by US desire to curtail Chinese influence. India's interests will span the globe and not be limited to the IOR.

Despite its global outlook in 2025, India's geopolitical view will be centred on a negative perception of China. Apart from the fact that China would like to remain the dominant power in Asia, deep-seated ideological, civilisational and territorial disputes between India and China will not go away easily. Consequently, it is difficult to imagine India becoming China's partner or ally. The relationship, at best, will remain one of cold cordiality at the political level, with economic ties providing the necessary stability to bilateral relations.

By itself, India will not be strong enough to counter the emergence of the Chinese dragon and will need to band with other powers to balance the power equation in Asia. The good news is that India already has very cordial relations with all existing and emerging centres of power – US, Russia, EU, Japan and Brazil. However, common long-term strategic interests, shared values, economic ties and the Indian Diaspora dictate closer engagement with the US, which is already happening. *Consequently, while India will tend to hedge its bets in its relations with major powers, it will tend to ally more closely with the US on major issues*[21].

The assumption of a future close Indo-US strategic alliance is supported by two scenarios likely between US and China in 2025, based on the extrapolation of current trends. The first is a '***China-US duopoly***'[22] driven by close economic interdependence, with China holding important cards such as US$ 1 trillion in

US Treasury Bonds and about US$ 500 billion in US hedge funds. This 'embrace' could lead US into a situation where it is forced to recognise China's sphere of influence in Asia. This is the worst case scenario for India, because US dependence on China will make it either unable or unwilling to confront it on any major strategic issue. India would then have to face China alone – and in 2025 there will be substantial power asymmetry in China's favour.

The second scenario is '*continued US hegemony*' based on a US economic renaissance powered by its scientific and technological prowess. Invention of a viable alternative to fossil fuels, or significant improvement in US competitiveness to reduce its import dependence, could be the signal of such a reinvention. With China's population starting to age by 2032, its chance to surpass the US will then gradually ebb away. This is the best case scenario for India, as its demographic and productivity predictions show that it will continue to grow at a higher average rate than China well into the middle of the 21st century[23], thus reducing the overall power imbalance between them by 2050.

India's relations with the US are central to balancing the power equation with China in Asia in both scenarios. In the first scenario, it would be advisable to tie the US into a close relationship well before 2020 so that it cannot easily avoid a confrontation with China in Asia. In the second scenario, partnership with the US would be advantageous in any case, as it would remain the premier global power. The caveat, of course, is to ensure that India's strategic autonomy does not get compromised in any bilateral arrangement with the US.

Put succinctly, India's geopolitical objectives for the future would be to "*enhance our strategic autonomy while improving our own nation, remembering that no nation is an island*". [24]

CHAPTER II

GEO-ECONOMIC DRIVERS IN 2025

The Planning Commission's *Vision 2020 Report* envisages that: "India 2020 will be bustling with energy, entrepreneurship and innovation. The country's 1.35 billion people will be better fed, dressed and housed, healthier, more educated and longer living than any generation in the country's long history….India will be much more integrated with the world economy and will be a major player in

terms of trade, technology and investment."[25] This positive scenario is based on a projected sustained growth rate of 10% till 2020. A World Economic Forum-CII joint study, '*India and the World: Scenarios to 2025*'[26], which dwells on alternate possibilities of India's future, also forecasts a 10% growth rate for India led by an *export-led growth*. While there could be slowdowns in our growth due to specific problems in a particular year, there is general global consensus on the long-term sustainability of India's growth story.

A globalised India will be the world's fourth largest economy by 2025. Almost two thirds of India's GDP will be dependent on the external sector and the country will be the world's second largest importer of oil. The Indian Ocean will be the pivot of world power due to the presence of dwindling global reserves of easily accessible oil in the Middle East and Central Asia. Given India's strategic position, the global community will rely substantially on its maritime power to ensure the unhindered flow of oil and commerce through the Indian Ocean. Climate change will also confront humanity with several existential challenges, many of which will be in the maritime domain.

The major geo-economic drivers in 2025 will, therefore, be *globalisation*, *energy security* and *climate change*, all of which are inextricably interlinked. This chapter will discuss the current and future trends in these issues to forecast what effect they will have on India's maritime strategy in 2025.

The Effect of Globalisation

Around 1770, on the eve of the Industrial Revolution, India was the second-largest economy in the world, contributing about 25% of the world's GDP. By the 1970s, after two centuries of economic stagnation, that share had fallen to 3% – the lowest in its recorded history.[27]

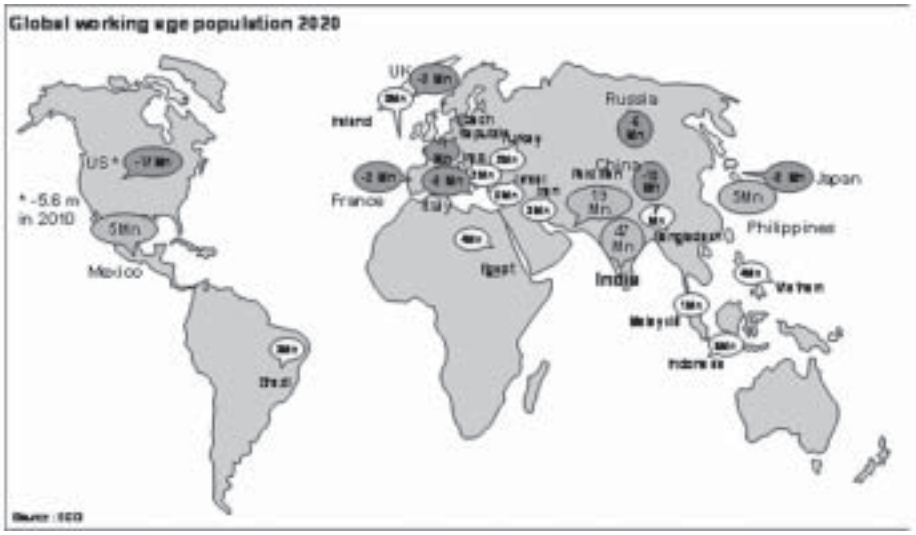
After the opening up of its economy in 1991, India's GDP growth rate has more than doubled, averaging 6% in 1990-2005 and 8% in 2005-08. India is today predicted to be the world's third largest economy by 2050 (after the US and China).[28] The number of Indians below the poverty line has also reduced from over 50% in 1991 to about 25% today.[29] Post-liberalisation, the dependence of India's GDP on the external sector has grown from 19% in 1991[30] to 50% in 2007; and with trade doubling in value every 2-3 years, is set to grow further. Recognition of the basic merits of globalisation for India's development has been proved by the fact that three different types of governments in India during the period 1991-2008 – centre, left and right – have not questioned its essential merits.

There are some distinct features of the present trend of globalisation that are different from the past. The *first* is that global financial, equity and commodity markets are totally integrated – a cursory look at the movement of stock exchanges across the globe on any given day will reveal their largely synchronous movement. The *second* feature is that manufacturing plants and processes are freely transplanted to locations across the globe, where they can be operated most cost-effectively. The rise of global production networks, with several countries being involved in the production of a single equipment, has in turn mandated a vast increase in transportation of items leading to the containerisation of cargo, which is the *third* distinct feature. Information technology (IT) and computerisation is the *fourth* feature that connects and facilitates the entire process of globalisation. Indeed, IT has not just connected global, financial and manufacturing processes but has also globalised the services industry in many sectors through business process outsourcing.

The *last* feature is the movement of people, skilled and unskilled, across national boundaries, to service the global system. The key importance of this feature for India is the annual contribution of over US$ 25 billion[31] by the Indian diaspora to her economy, which is a major factor for balancing India's substantial trade deficit. Over 25 million Persons of Indian Origin (PIOs) are scattered across the globe with major concentrations in the Middle East (6 million), Africa (3 million), the UK (1 million) and the US and Canada (2.1 million).[32] In recent years there is a renewed desire for support from these populations in times of crisis, which can no longer be ignored due to political reasons. Fiji, where the Indian government was forced to despatch a naval ship as a show of support for the Indian community; and the Beirut naval evacuation of Indian expatriates, both in 2006, are recent examples of the use of maritime power in support of our Diaspora.

Globalisation promises to increase the tribe of overseas Indians substantially. India's population is expected to reach 1.4 billion by 2030, 60% of which will be below the age of 30.[33] To meet the expectations of its people, healthy growth of the Indian economy is not just a humanitarian or social issue, but an existential one. The only viable solution lies in further expanding her economic engagement with the world. India being one of the few countries with surplus working population (see Figure 3) human resources will be a major export worldwide. India's Diaspora will represent a resource that will need to be connected with, and when required, provided protection or evacuated, all of which will mandate a maritime capability.

Figure 3



In this inter-connected 'flat world,'[34] the global dimension of security has taken on as important a role as national security. Indeed, for the developed world, security beyond their borders is today as important as security *within* their borders. As the 2003 EDSP states, "We need to be able to act *before* countries around us deteriorate, when signs of proliferation are detected, and *before* humanitarian emergencies arise. *Preventive engagement* can avoid more serious problems in the future."[35]

Since most countries in the world today, with very few exceptions, have a stake in globalisation, security concerns of states are increasingly converging. By 2025, it is estimated that globalisation would have enmeshed most of the world so closely that conflict between major nations would be difficult to imagine due to the pernicious knock-on effects on the global economic and financial system. Indeed, if such a situation did arise, most of the world would unite to stop the conflict from either occurring altogether or containing it at the lowest level possible.

As far as the IN is concerned, the globalisation of India's economy carries the onus of ensuring peace and tranquillity in the maritime environment around us, so that our development (and international commerce) can flow unhindered. These requirements will require both an independent maritime capability and collaborative arrangements with like-minded countries.

Globalisation notwithstanding, one issue which could raise the spectre of conflict, is energy security.

Implications of Energy Security

It is an indisputable fact that not just India's growth, but its very stability and survival is linked to the availability of energy.[36] With 15 million young people likely to join the job market every year, only a growing economy will be able to absorb the numbers, failing which there could be widespread anarchy and unrest, compared to which the current Naxalite rebellion would look like a camp fire!

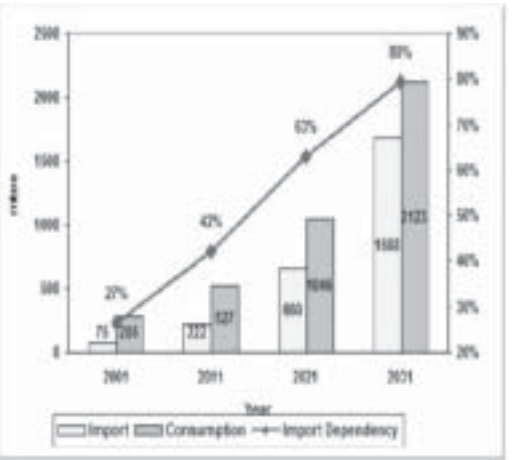


Figure 4 India's likely Energy Dependency
(BAU scenario)

The Integrated Energy Policy document has estimated energy requirements in the year 2030 to be higher than today's levels by a factor of four to five if our economy grows at around 8% per annum. Electricity generation capacity would need to go up from our current installed capacity of 131,000 MW to between 800,000 and 950,000 MW.[37] To achieve this generation capacity, it has been estimated that in the year 2031, India's energy import requirements will be: 1438 million metric tonnes of coal with an import dependency of 73%; 680 million tonnes of crude oil, with an import dependency of 93%; and 93 billion cubic metres of gas with an import dependency of 67%.[38] The overall energy import dependency by 2031 is expected to be in the region of 80%; 100% of these energy imports will be transported over the seas.

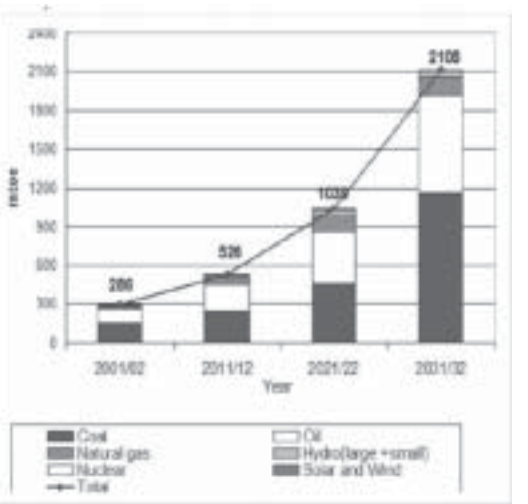


Figure 5 Commercial energy requirements for India

Over the past two years, the picture has been complicated by the exponential rise in the price of oil. In 1996, oil was traded at US$ 20 per barrel; in July 2008

it touched US$ 147 per barrel. OPEC has stated that oil prices could even touch US$ 200 per barrel if there is a major crisis, such as a US-Iran conflict.[39] Clearly, globalisation, which was premised on cheap global transportation (the 'just in time' model), cannot continue in its present format at current oil prices.

OPEC estimates that at current levels of consumption, reserves of 'conventional oil'[40] (conventional oil refers to oil easily accessible on land or sea.) will last only for another 50 years. The peaking of production; increase in demand from India and China; lack of infrastructure for refining and transportation; threat from terrorists; disruption of oil fields in Iraq, Iran, Libya, Myanmar and Nigeria; and the role of speculators are among the many reasons ascribed to the exponential rise in the price of oil. However, geopolitics is the common thread that connects all these reasons. With 60% of global oil reserves located in the Middle East, the Indian Ocean is the one region in the world where the imagined geographies of oil, Islam and terrorism converge. It is no surprise that navies of most major world powers are present in force in the IOR, and are likely to remain here for the foreseeable future.

The dual threats of high oil prices and climate change due to global warming are driving the world to seek alternate energy sources, which do not contribute to global warming. However, even if a viable alternate source of energy is discovered, it will take decades before the world is fully weaned away from oil as a source of energy. The proposed construction of pipelines to transport crude or gas from Iran, Myanmar and Central Asia[41] is also likely to remain a 'pipe-dream' due to economic and geopolitical reasons, and hence transportation of hydrocarbons for India will only be possible over the seas.

Consequently, to a maritime strategist, three issues of strategic importance come to mind. *Firstly*, future scarcity and high price of oil will make commodity denial a viable strategy for naval forces, particularly against countries substantially dependent upon import of hydrocarbons. By the same coin, SLOC protection will also be a major task for maritime forces.

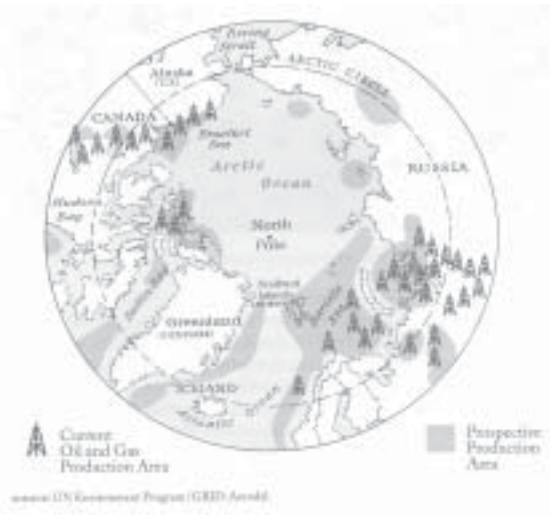
Secondly, since prices of conventional oil will now remain high due to peaking of production, exploitation of deep sea reserves and 'unconventional oil'[42], which are economical to develop only if they market at over US$ 60 per barrel, is now a viable proposition. These reserves could last over 100 years at current consumption levels. Exploitation of deep sea reserves will be, more often than not, in international waters or in areas such as the Arctic Sea, where sovereignty of a state is likely to be contested, the outcome of which will be decided only by maritime power.

Thirdly, the use of oil as a means of maritime propulsion will become progressively less cost effective, and alternate means of propulsion – nuclear, electrical, wind or solar – will need to be considered. Even for ships persisting with conventional propulsion, new emission norms will require costly upgradation of technology, which brings us to the issue of climate change.

Implications of Climate Change

Climate change will have great bearing on international security in the years ahead. As climate change is expected to unfold gradually over many decades its impact will neither be sudden nor easily distinguishable from other factors. Climate change in itself is also unlikely to lead to wars between states. However, it will undoubtedly aggravate tensions and be a subsidiary reason for future conflicts, particularly over resources. For example, it is estimated that the Darfur conflict has been exacerbated due to a 40% reduction of rainfall in that region over the past century.

Figure 6



Prospective oil and gas resources underneath the Arctic Ocean

In the maritime environment, climate change will cause: alteration of coastlines due to rise in sea levels and consequent change in maritime borders, EEZ and continental shelves; opening up of new sea routes; and greater frequency and intensity of natural disasters, particularly in coastal areas. One clear example where

climate change can cause conflict in the maritime environment is the Arctic, where the ice cap is melting.[43] As per a recent US Geological Survey report, 25% of the world's oil and gas resources lie beneath the Arctic Sea. Russia, Canada and Norway have already lodged their claims in the area, with Russia going so far as to plant their flag on the Arctic sea bed. Canada is building a new Arctic sea port at Nanisivik inside the eastern entrance to the Northwest Passage and has ordered eight new Arctic Patrol Vessels at a cost of C$ 3.1 billion. Since the US has not ratified the UNCLOS, it is at a disadvantage vis-à-vis other Arctic states and its position on the issue will be interesting to watch.[44]

Figure 7

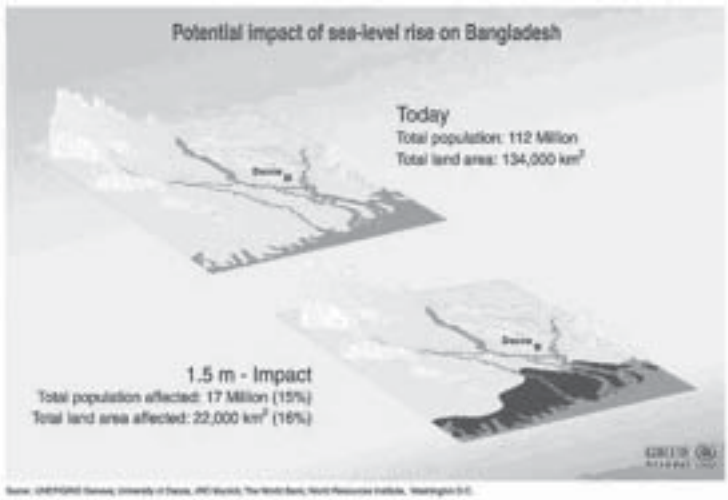
The proposed sea route through the Bering Straits to North America and Europe from the Far East

The Indian Navy would do well to study the strategic implications of the opening up of the sea route through the Bering Straits to North America and Europe from the Far East, which could considerably reduce traffic through the Suez Canal and the Indian Ocean. The likelihood of the opening up of many Russian Arctic ports, normally ice-bound for a considerable part of the year, combined with the opening up of Arctic sea-routes could also herald the maritime revival of Russia and Canada.

Closer home, rise in sea levels could displace over 2 billion people in Asia alone. The worst effects of this will be felt in Bangladesh, Shanghai, the Nile Delta and the Mekong delta (where over 138,000 deaths have already occurred

this year due to Cyclone Nargis). This displacement will lead to mass migrations, exacerbating the present stress on land and water resources.

Figure 8



The issue of carbon emission control has so far kept the maritime sector out of its ken. It is estimated that the world's 50,000 merchant ships, which carry 90% of all traded goods, emit 800 million tons of carbon dioxide each year, which is 5% of the world's total.[45] It is only a matter of time that the pollution being caused by ships (including warships) comes on the international agenda. This could happen as early as 2009 when the UN talks on a new environment protection protocol commence in Copenhagen (the 1997 Kyoto protocol expires in 2012).

Clearly, therefore, climate change has a range of implications which need to be studied and catered for in our maritime strategy. Prima facie, these would include: an increased role for hydrography; more frequent disaster relief operations; combating implications of sea level rise on existing and envisaged naval and maritime infrastructure; and commissioning of studies to assess the potential outcomes of changes in maritime geography (and hence maritime strategy) over the coming decades. Climate change will also impact food security, which has a close maritime connection.

Implications of Food Security

Current trends indicate that due to various factors such as a growing population, change in consumption patterns, stagnating yields, and climate

change[46], India will become a chronic net importer of both rice and wheat. The Indian Agricultural Research Institute has predicted that India could need to import 23 million tonnes of wheat by 2020. While global food availability is not expected to be a problem, the fact that India will be a food importer (instead of an exporter until 2007), will generate its own geopolitical dynamics due to the likely sources of import, which will range from the US and Canada to Australia to Argentina.

CONCLUSION

As India's power grows, its interest in ensuring peace and tranquillity in its neighbourhood and a 'favourable' economic environment for its development will only increase, not unlike that of great powers through the ages. Whether it is the issue of unhindered global trade, the necessity to ensure food and energy security for our teeming millions or the need to attend to our global diaspora, the maritime sector and maritime power will be a common factor and key enabler.

CHAPTER III
THE NATURE OF WARFARE IN 2025

Man is a violent creature and conflict a basic survival instinct ingrained in his genes over eons of existence.[47] The methods of executing violence, especially organised violence or warfare, have changed over the ages. The first 'generation' of warfare was the 'Age of Gunpowder'; the second the 'Age of Firepower'; and the third the 'Age of Manoeuvre'. The current fourth generation warfare has been described as the 'Age of Networks' – combat characterized by the blurring of lines between war and politics, soldier and civilian, peace and conflict, battlefield and safety.[48]

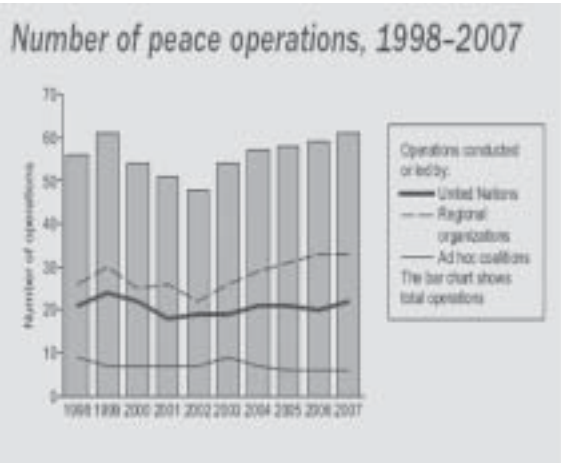
The concept of security has also undergone a sea change in today's globalised world with the focus shifting from 'national security' to 'human security'. It is felt that human suffering on an individual level and conflict and violence on communal, regional and international levels can be significantly reduced if basic human security can be guaranteed from threats that emanate from direct and structural violence.[49] Human security, thus defined, depends not only on national security but also on regional and international security. It is also clearly evident today that the security challenges faced by the world, such as climate change, terrorism, spread of pandemics and proliferation of WMD, cannot be handled by a single country or even a group of countries. Consequently, no country today can

totally divorce its security problems, internal or external, from its neighbours or the larger international community.

Technological advances, *nuclear weapons* and *globalisation* are the major factors in the current age of warfare. This chapter will examine each factor in order to forecast warfare trends that could exist in 2025.

Technology and Conventional Warfare

Figure 9



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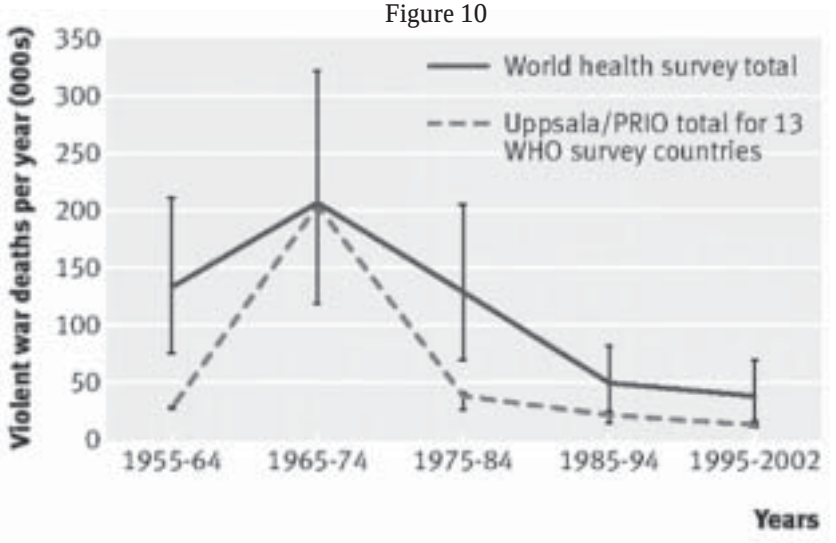
Warfare since the end of the Cold War has undertaken many forms: the hi-tech stand-off aerial warfare in Kosovo; the armoured and air power campaign in Iraq in 1991 and 2003; the Special Forces plus hi-tech aerial war in Afghanistan in 2001; and the UAV-dominated Israel-Hezbollah war in 2006. While each conflict has been different, the common thread through all of them has been the use of technology as a force multiplier. This is not to say that technology is the panacea for all ills, as the West is discovering to its discomfiture in the ongoing insurgencies in Iraq and Afghanistan, and Israel discovered in its war against the Hezbollah. But even where 'boots on ground' is a prerequisite, technology has provided several viable solutions.

Technological advances in the range, accuracy and lethality of weapons have already made conventional war between equal adversaries unviable. The last 'mass casualty' conflict was the Iran-Iraq War (1980-88), which caused over a million fatalities.[50] Wars since then have almost always occurred, either between adversaries

of vastly different technological or force levels (US vs Iraq, Israel vs Hezbollah, Russia vs Georgia) or between states possessing low levels of military technology (Ethiopia vs Eritrea). Even where conflicts have occurred between advanced militaries, such as the Kargil conflict of 1999, they have been prevented from escalating to levels, which could lead to higher casualties. However, advances in weapons technology could *also* create circumstances encouraging the pre-emptive use of military force. [51]

Figure 10



Violent deaths in the world in the period 1955-2002[52]

A study carried out by the University of Maryland shows that wars of all kind have been declining since the 1980s and that we are at the lowest level of violence since the 1950s.[53] In 2007, while there were 14 major conflicts ongoing in 13 locations around the world; none of them was an inter-state conflict. Overall, since 1997, there have only been four inter-state conflicts – Eritrea-Ethiopia (1998-2000); India-Pakistan (1999); US-Iraq (2003) [54] and (Russia-Georgia) (2008). By 2025, the enhanced range, lethality and accuracy of conventional weapons will ensure that conventional wars between states will occur *only in situations of technological or force asymmetry*. India will, therefore, need to ensure that it is not left at the lower end of the technological spectrum vis-à-vis its potential adversaries.

Deterrent Power of Nuclear Weapons

Nuclear weapons are the second major factor impacting the nature of warfare. India and Pakistan's nuclear tests in 1998 not only changed the nuclear weapons order, but also the India-Pakistan and India-China relationship. If we regard the

Kargil conflict as an aberration in the first flush of Pakistan's nuclear weaponisation, nuclear weapons are largely seen as a stabilising factor in preventing *major* outbreak of conflicts. However, the quality, strength and variety of nuclear weapons are all factors that determine the stability of such deterrence. In 2007, all the five states defined as nuclear weapon states (NWS) by the 1968 Non-proliferation Treaty (NPT) were in the process of developing a new class of nuclear weapons and delivery platforms.[55] The US and Russia have also reiterated their intention to use nuclear weapons, with the US proposing the concept of 'tailored deterrence'[56], providing evidence that the deterrent role of nuclear weapons is going to continue well into the 21st century.

The Restraining Influence of Globalisation

Figure 11

Rank	Country	Total Trade as a Share of GDP	Rank	Country	Total Trade as a Share of GDP
1	Singapore	456.0%	40	Egypt	72.4%
2	Hong Kong	385.0%	44	China	69.0%
3	Malaysia	223.2%	46	Indonesia	65.1%
4	Belgium	168.3%	48	Turkey	62.0%
5	Estonia	165.2%	49	Mexico	61.7%
6	Slovak Rep.	160.0%	53	UK	56.7%
7	Thailand	148.9%	54	Russia	56.7%
8	Ireland	148.7%	55	Iran	56.4%
9	Jordan	145.1%	56	South Africa	55.8%
10	Vietnam	141.7%	58	France	55.2%
16	Netherlands	127.4%	62	India	50%
17	Taiwan	126.2%	63	Pakistan	43.6%
26	Philippines	100.0%	66	Bangladesh	41.2%
28	Israel	88.7%	67	Australia	40.8%
30	Saudi Arabia	83.8%	69	Japan	28.2%
31	Korea, Rep.	83.9%	70	Brazil	26.3%
36	Germany	76.4%	71	United States	26.2%
37	Sri Lanka	76.2%			

Percentage dependence of GDP of 35 major countries on global trade in 2007[57]

The third factor inhibiting the occurrence of inter-state warfare is 'globalisation', which has led to global and regional interdependence. As discussed earlier, national finance, trading and currency systems are so tightly enmeshed into the global system that each one can benefit or suffer from the gains or the problems of the other, to a greater or lesser extent. In the future, trade agreements, complex multiple-state manufacturing and transportation processes and a globalised work

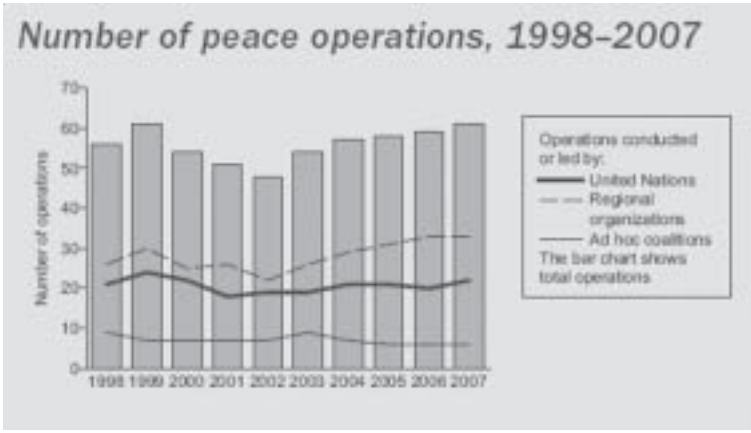
force will combine to act as inhibitors to warfare between globalised states, as evident from Figure 11.

The Nature of Future Warfare

The remote probability of conventional war, does not offer any peace dividend. The classical conventional war-fighting roles of Armed Forces will still be required to maintain equilibrium between states and deter non-state actors. It does, however, imply that militaries are likely to be used much more frequently in roles other than traditional warfare. Speaking at the Association of the United States Army, US Defence Secretary Gates recently stated that 'asymmetric warfare will remain the mainstay of the contemporary battlefield for some time'.[58] New mutations of warfare will also appear in cyberspace and space. Cyberspace will primarily be used to inflict financial and psychological damage through the internet, and to steal critical information. The book '*Unrestricted Warfare – China's Master Plan to Destroy America*[59]' by Chinese authors already talks of unrestricted warfare in cyberspace and trade and finance wars targeting the adversary country's economy and people. Space could be militarised with the aim of dominating near-Earth space.

Asymmetric warfare and actions by terrorists and non-state actors such as Al Qaeda and LTTE will be the most frequent high-end threat to the security of states. By 2020 it is expected that similarly inspired but more diffuse Islamic extremist groups would have superseded Al Qaeda.[60] Non-state actors would have also moved up the technology chain and possibly then gained access to some sort

Figure 12



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of a weapon of mass destruction – most likely biological or nuclear. Countries the world over would be hard pressed to control this contagion and dedicated intelligence, surveillance and Special Forces teams would be needed to locate and neutralise such threats.

Peacekeeping operations will retain a steady trend in 2025. While classic inter-state peacekeeping operations will remain in the ken of the UN, intervention operations (with or without UN sanction) or peace enforcement operations under Chapter VII of the UN Charter will devolve upon regional organisations or 'coalitions of the willing'. Of the 61 peace operations conducted in 2007, only 22 were under the aegis of the UN, the others being conducted by regional organisations such as the OSCE, EU and AU. These will include stabilisation operations in failed states, prevention or mitigation of genocides and humanitarian assistance and disaster relief operations. While India's permanent membership of the UNSC by 2025 is not certain, India's growing global importance will mean that in addition to participating in UN operations, it will be expected to take the lead in some regional operations.[61] In the past India has interceded in Maldives and Sri Lanka and in Indonesia; Sri Lanka and Maldives in the aftermath of the 2004 tsunami. In the future we may be expected to act even farther afield. Combating piracy off Somalia is an example where the IN could be employed for the benefit of the international community.

Nature of Future Warfare in the Indian Context

There is no existential danger to India today, and while economic, political and asymmetrical threats predominate, external military threats have not totally gone away. Whereas new threats could arise in the future, the only current state-actor military challenges to India emanate from Pakistan and China. Pakistan *could* contemplate 'adventurism' against India in the future, but is unlikely to do so until US forces remain in Afghanistan. While this pre-occupation could dilute their stance on Kashmir,[62] cross-border support to internal insurgencies inside India – whether state-sponsored or by non-state actors – is unlikely to stop. This will take the form of insertion of terrorists, drug and weapon smuggling, illegal immigration and economic and cyber warfare.

China is also expected to keep up its traditional game of tying down India by covertly assisting anti-India forces wherever possible. However, there is unlikely to be an overt conflagration over territorial issues with both these countries by 2025, *unless one of the parties is significantly weakened – either technologically or in terms of force levels*.

In sum, India's enemies will exploit our internal fissures to weaken the state. India's response will require both the capability to combat asymmetric threats, as also conventional and strategic capability sufficient to keep the level of deterrence high. In the case of the IN, the trends imply a continued bias towards building conventional and strategic capability to deter potential adversaries while concurrently acquiring capabilities to combat the actions of non-state actors and terrorists.

CHAPTER IV

TECHNO-MILITARY DRIVERS IN 2025

Human resources remaining constant, technology will be the single most important factor for a combat capable navy by 2025. Access to technology does not only mean the possession of the latest weapons and sensors. It also implies the capability of independent exploitation, repair and upgrades, without which a navy only ends up investing in systems that are un-exploitable within a short period due to lack of know-how and spares. Acquiring technological know-how is not easy, for technology denial regimes and intellectual property rights are built into most weapon sales, either to control the usage of the weapons or to build dependency through supply of spares and repair expertise.

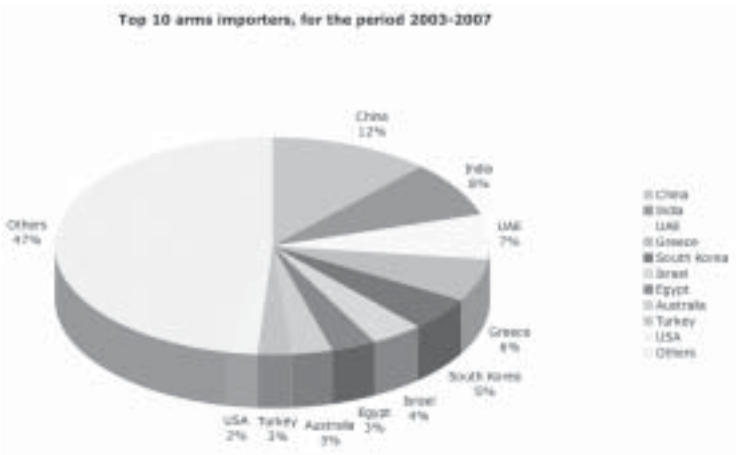
Depending on its defence requirements, R & D capability and industrial infrastructure, three broad methods of acquiring defence technology are available to every country. The first is indigenous development and production, which requires substantial investment and a large customer base for profitable production. While no country is totally self-sufficient, the US and Russia can be considered to fit this category. The second method is collaboration, where development and production costs are shared between countries. The vast majority of countries producing military equipment fall into this category. The third method is outright purchase. Most developing countries fit this category.

Non-identification of the correct methodology to develop its defence industry after independence by India has led to almost total failure in development of 'indigenous' weapons and sensors. India was the second largest importer of weapons in the world in 2003-07, and this handicap will severely limit its strategic autonomy in the 21st century.

In this chapter, R & D and acquisition trends of major militaries, with particular reference to navies, are examined to identify key future technologies

and equipment in order to focus our efforts and achieve self-reliance through collaborative development using both the public and private sectors.

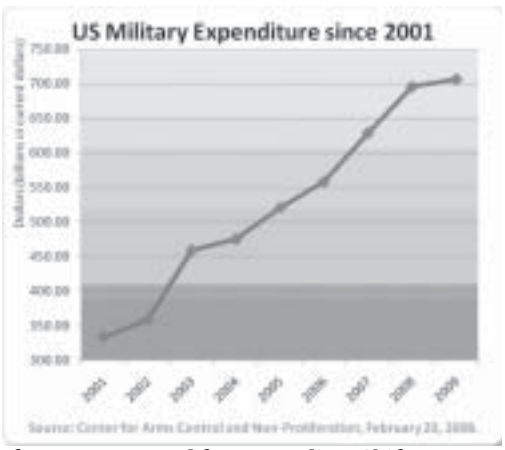
Figure 13



Worldwide Defence R & D and Acquisition Trends

United States. Defence spending was US$ 696 billion in 2008 and is set to rise to US$ 708 billion in 2009.[63] Of this, one-third is spent on GWOT. Military spending having doubled today from US$ 335 billion in 2001 is likely to plateau in 2009 and dip to US$ 671 billion in 2010 due to the financial problems in the US.[64] With operations ongoing in Iraq and Afghanistan (where costs cannot be cut), the largest, most capable and combat-tested military in the world is today caught in the dilemma of having to juggle resources to retain conventional superiority while improving asymmetric warfare capability.

Figure 14



Broad trends in the US Armed Forces show that: ground forces, Special Forces and Special Operations Forces are expanding (while the Navy and Air Force down-size to accommodate growing capital costs); heavier forces are being transformed into lighter, easily transportable battle combat teams; a separate civil affairs and psychological operations force has been formed; and security of military bases is being upgraded.[65]

Equipment trends (shown in Figure 15) indicate greater funds and R & D to: unmanned aerial and ground vehicles (UAVs and UGVs); joint and single service communication; and military satellite and space capability. The US Navy's efforts are focussed towards development of: ship-borne theatre missile defence (TMD) capability; new generation carrier-borne aircraft (such as the JSF) and ships such as DDG 1000 and LCS; net-centric capability; and a new generation of nuclear powered attack carriers.

Figure 15

Major US Research & Development, FY 2006-2008

Eqpt	Designation	Value ($m) FY 2006	Value ($m) FY 2007	Value ($m) FY 2008
Joint Equipment				
UAV	Global Hawk	257	247	298
Tpt	C-130	243	271	262
Army Equipment				
Hel	AH-64 Apache	104	122	193
Hel	Armed Reconnaissance Helo	88	131	82
FCS	Future Combat System	3219	3389	3563
Navy Equipment				
AEA	F/A-18G Growler	379	372	272
FGA	F-35 JSF	2187	2163	1707
Hel	V-22	192	267	118
Hel	VH-71 Executive Aircraft	897	630	271
CVN	Carrier Replacement	300	307	232
DDG	DDG 1000	1,052	808	503
LCS	Littoral Combat Ship	584	329	217
SSN	Virginia	168	201	224
AEW	EC-2	619	505	831
Sat	MUOS	449	662	611
SAM	Standard	148	176	231
EFV	Amphibious Vehicles	243	347	288
JTRS	Joint Tactical Radio System	371	796	853
Air Force Equipment				
Bbr	B-2	281	241	244
Tpt	C-17	160	173	181
Tpt	C-5	225	150	203
Tkr	KC-X	24	69	314
FGA	F-22	413	472	743
FGA	F-15	137	137	101
FGA	F-16	124	152	90
Hel	CSAR-X	-	200	290
Sat	AEHF	639	630	603
Sat	NAVSTAR GPS	264	490	708
Sat	SBRS	706	664	587
Sat	TSAT	416	729	963
Sat	Space Based Radar	98	185	-

European Union. Germany's 2006 White Paper on Security Policy[66] states that international crisis missions are the most likely tasks for Europe's militaries, and therefore have over-riding influence on the structure and the capabilities of their Armed Forces. In pursuance of this aim, deployable EU battle-groups have reached full operational capability in January 2007 with the first deployment to Chad and the Central African Republic in October 2007. Discussions on a maritime rapid response concept and rapid response air initiative are also advancing – together they will form the EU Military Rapid Response Concept.

France, Germany and UK. Financial constraints forced *France* to undertake a review of its defence strategy in June 2008, which resulted in a cut of 54,000 personnel and closure of several bases[67]. Emphasis is being placed on space assets for ISR and intelligence collection. Acquisition of follow-on aircraft carrier to Charles de Gaulle has been postponed till 2011 while littoral warfare capabilities are being strengthened. President Sarkozy is also considering re-integrating France with the NATO command structure.[68] *Germany* is prioritising force protection, reconnaissance, net-centricity, missile defence, precision stand-off strike capability and strategic deployability. The *United Kingdom's* major forthcoming defence acquisitions include design and construction of a follow-on to the Vanguard-class SSBNs (in service 2024 with an upgraded version of Trident D5 missile)[69]; and two 65,000-ton aircraft carriers (the largest warships ever inducted into the Royal Navy) with an embarked air wing of 40 JSF aircraft.

China. China's defence budget has been rising at an average of 15.5% for the past 14 successive years. Currently stated to be US$ 58.8 billion[70] (unofficial estimates put it at 2-3 times the official figure) it is expected to reach US$ 360 billion by 2020.[71] China's 2006 White Paper on Defence identifies joint operations, trans-regional mobility, air-ground operations, long distance operations and special operations capabilities as areas of emphasis. Notably, the People's Liberation Army (PLA) has down-sized by about 700,000 personnel over the past decade, almost one-fourth of its Armed Forces, which now total 2.3 million.

Analysis of China's defence spending indicates priority to building up maritime capabilities to deter the US in case of a conflict over Taiwan. These include a more robust submarine-based second-strike capability and greater capability for offshore defensive operations. Towards this PLA Navy's build-up includes: commissioning of two *Shang*-class SSNs and one *Jin*-class SSBN; completion of testing of their 8,000 km range JL-2 SLBM, enabling China to target the West Coast of the US from the South China Sea; addition of conventional submarines[72]; and continued

strengthening of their blue water fleet with Russian missile cruisers and indigenous destroyers and frigates.[73] While there appears to be a consensus in the PLA Navy that aircraft carriers are 'desirable' there does not yet seem to be decision to either build one or refit *Varyag* berthed at Dalian.

Russia. After over a decade of quietly watching NATO advancing eastwards towards its borders, a resurgent Russia has started re-asserting itself by stridently objecting to US missile defence plans and NATO's expansion in Eastern Europe. It is concentrating on increasing its military profile in Central Asia through joint exercises and training ties under the Collective Security Treaty Organisation (CSTO), while establishing closer defence ties with China under the aegis of the Shanghai Cooperation Organisation (SCO). Interestingly, despite the overtly acrimonious relationship with the US and NATO, bilateral and multilateral exercises with these forces have not yet slowed down, indicating that Moscow is hedging its bets.

With a defence budget of only around US$ 38 billion, Russia's priority is modernisation of its strategic forces. It has resumed strategic bomber flights; activated the new *Topol-M* ICBM with MIRV warheads; successfully fired the *Bulava* SLBM from a *Typhoon*-class submarine; is developing a new *Borey*-class SSBN; and giving priority to upgrading its national air defence capabilities. However, a serious problem facing the Russian Armed Forces is the lack of manpower due to Russia's adverse demographics, which will hamper the ongoing changeover from a fully conscript to an all-volunteer force. Another significant trend is stagnation in their R & D budget, which does not augur well for future development of their weapon systems.

Japan. Japan's attempts to 'normalise' its defence policy and establish defence relationships with Australia, India and the EU (apart from its close alliance with the US), which had gained momentum in 2007, have slowed down with the change in government. Japanese Maritime Self Defence Force ships involved in Operation Iraqi Freedom (OIF) have also been withdrawn with effect from 01 November 2007. However, geopolitical realities in East Asia could rekindle the momentum. Japan's current acquisition priorities include: the commissioning of the *Hyuga*-class helicopter carriers (largest Japanese warships built since World War II); creation of BMD capabilities; and indigenous development of maritime patrol aircraft.

India. India will spend around US$ 50 billion for capital acquisitions for the three Armed Forces over the 11th Plan period (2007-12). The new defence procurement policy, especially the latest version DPP-2008[74], has further streamlined weapons procurement procedure. The most significant caveat is the need for suppliers to offset their costs by ploughing back at least 30% of the purchase value into India, which will encourage private participation in the defence sector. There is also a nascent move towards joint procurement in areas of commonality, which offers hope of reduction in unit costs through increased quantity of procurement.

As far as equipment acquisition is concerned, apart from efforts to operationalise its nuclear triad, India is still giving priority to the induction of conventional capabilities such as tanks, artillery, fighter aircraft and aircraft carriers, with a growing interest in net-centricity, military satellite capability and UAVs. In response to the asymmetric threat, ground forces have increased in numbers but insufficient attention is being paid to even simple technological palliatives. Growing costs and unreliability of Russian equipment and past wariness of the West has meant that Israel has emerged as our preferred collaborator and No. 2 arms supplier (after Russia). Since 2000, India has bought military hardware and software worth US$ 7 billion from Israel.[75] The flagship Indo-Israel project is the development of the Barak-8 surface-to-air missile system with the option of developing an improved version in the future.

Trends in Defence Industry

The global defence industry is booming due to ongoing conflicts and evolving security threats.[76] To cut manufacturing costs there is a constant move towards mergers of arms manufacturers in US, Europe and Russia resulting in mega defence corporations such as BAe Systems, EADS, Lockheed Martin, Northrop Grumman, etc[77]. There is also a notable trend for trans-Atlantic mergers with European corporations acquiring smaller US companies to leverage the US market, which remains the largest defence procurer, but whose domestic industry is protected by the Buy America Act.[78]

The trend towards mergers has intensified after the European Union created the European Defence Agency (EDA) in 2007 to strengthen the continent's defence, technological and industrial base.[79] Mergers, particularly of western arms producers, have aided cartelisation, thereby adding to already steep increases in costs of defence equipment. Availability of sensitive or hi-tech equipment for non-alliance members has also reduced due to restrictions on sales by the EU and US.[80] India has already

confronted this dilemma in the past and future purchase of western equipment will definitely come with some strings attached.

Methodology of Future Technology Induction

After independence, a non-aligned India under Nehru favoured a policy of self-sufficiency in defence equipment, but ground realities soon forced it to go in for self-reliance instead. To achieve self-reliance defence production became the exclusive preserve of the government, with a number of public sector units and the DRDO (set up in 1958) to oversee the development of defence equipment. Unfortunately, except for a few low-tech successes, this approach has not enabled India to achieve its intended goal.

The failure prompted the government to appoint the Kelkar Commission in 2004 to suggest measures needed for strengthening self-reliance in defence preparedness. The commission's recommendations for liberalisation of the sector by involvement of private players, stepping up of exports, and in general creating a military industrial complex that can compete globally, has been accepted by the government. This move is meant to replicate the benefits that the Indian economy has reaped through liberalisation by the emergence of economically powerful 'dual-use' sectors.[81] There is no doubt that if India is to leap-frog the technology gap that exists today, it will have to consciously move from a philosophy of 'stand-alone self-reliance' to 'collaborative self-reliance' with suitable countries and involve the private sector both in R & D and production. Let us look at the example of the UK in this regard.

Following the Strategic Defence Review of 1998, the UK's Defence Evaluation and Research Agency was transformed in 2001 into two new organisations, QinetiQ and Defence Science and Technology Laboratory (DSTL). QinetiQ contains approximately two-thirds of the old defence research organisations and is structured as a commercial entity with a mandate to attract private investment. DSTL has been retained in full public ownership and management with key capabilities to ensure that UK's MoD has access to unbiased high quality scientific and technical advice, as well as retaining control over capabilities in research and operational analysis that are too sensitive for the private sector. To improve delivery of research a new Defence Technology and Innovation Centre (DTIC) has been formed under DSTL with six integrated technology teams – air, land, maritime, C4ISTAR, weapons and high innovation. These are responsible for delivering cutting edge defence research and work closely with the private sector and universities over a wide range of interests. The placing of significant onus on the private sector and free enterprise works better than government organisations, as it attracts better talent and is inherently innovative.[82]

Key Future Technologies

Apart from restructuring Indian procedure for the induction of technology, there is an urgent need to identify future key technologies of importance to our defence, to focus attention and money on these areas. Military historian John Chambers correctly noted, "None of the most important weapons transforming warfare in the 20th century – the airplane, tank, radar, jet engine, helicopter, electronic computer or the atomic bomb – owed its initial development to a doctrinal requirement or request of the military." To this list can be added unmanned systems, global positioning system and internet technologies. Near-term requirements generally drive the Armed Forces of any country to focus on immediate needs at the expense of major change.

That is where an organisation like Defence Advanced Research Projects Agency (DARPA) of the US comes in, whose *only* charter is radical innovation. DARPA's approach is to imagine what capabilities a military commander might want in the future and accelerate those capabilities into being through technology demonstrations.[83] For example, the 14 Future Technology areas identified by DARPA for the US Armed Forces include: self-forming and self-defending networks, key to network-centric warfare; miniaturizing atomic clocks to fit on chips in network communications; anti-terrorist technologies and asymmetric activities such as improvised explosive devices; UAVs; the ability to use space for military purposes; maintain the US lead in supercomputing; real-time machine translation of text and speech with human translation accuracy; biological defense capability to accelerate the development of vaccines; developing brain-controlled prosthetics; exploiting quantum phenomenon in the fields of computing, cryptography and communications; develop "Newton's Laws for Biology"; develop cheaper technology for extracting titanium from ore to make it practical for many more military applications; technologies to reduce the military's reliance on petroleum; and small-size and low-weight laser weapons for mobile air and ground vehicles.[84]

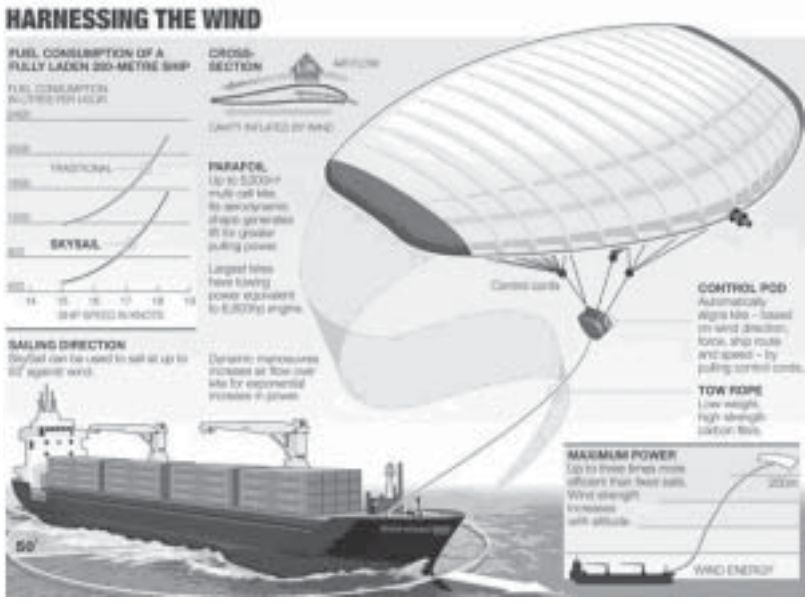
Figure 16

Zephyr, a lightweight solar-powered plane built by British defense and security tech company QinetiQ[85]

Let us take the example of UAVs, which have emerged as a cost-effective and politically expedient reconnaissance and combat platform. Globally, it is expected that more than 9,000 UAVs will be purchased over the next ten years. Spending on these technologies alone in the US will increase from US$ 4 billion in the 1990s to US$ 14 billion in 2001-10.[86] Future roles for UAVs, expected to be in operation between 2025-50 include: replacing low-level satellites for communications relay and imagery, including geo-stationery UAVs; carrying or reflecting directed energy weapons; 'morphing and self-healing UAVs' with loiter capability to patrol borders and burst speed capability with changed aerodynamic shape to pursue a target; aerial refuelling UAVs; and nano-UAVs, which could be launched from any platform, including submarines. Solar powered surveillance UAVs flying at altitudes of 20 km with endurance as long as six months are already being tested.

In the IN, UAVs have proved that unmanned aerial vehicles are a better alternative for close coast surveillance than manned aircraft. By 2025, the IN needs to induct sufficient UAVs to enable the country's entire EEZ to be patrolled by such craft. Ship-launched UAVs for targeting and reconnaissance and UCAVs and USVs should also have been inducted.

Figure 17



Wind assisted sail propulsion for ships could save 20% fossil fuel consumption[87]

Another example is the need to consider alternate means of maritime propulsion due to the exponential increase in oil prices, which has more than doubled the operating costs of navies the world over.[88] A gradual shift to alternate means of propulsion in future platforms – principally nuclear and electric, but also fuel cells and other sources such as wind – and catering for a mix of bio and traditional fuels, to ensure that fuel costs do not exceed an acceptable percentage of our budget, is a necessity not an option. Planning for this shift needs to start now.

CONCLUSION

India's 11th Plan speaks of 'implementing selected national flagship programmes in mission mode so that India achieves a leadership position in some high technology areas' and 'establishing globally competitive research facilities and centres of excellence through public-private partnerships'. It also recommends leveraging international collaboration in science and technology to take advantage of complementary capabilities.[89] DPP-2008 also promotes 'joint ventures' and has eased licensing rules for the private sector.

There is no reason why the Indian defence establishment cannot carry out an assessment of critical equipment and technologies that are vital for future development of its weapons and sensors and focus on their development. A collaborative approach in defence production with partners such as Russia and Israel, and synergising public-private partnership in manufacturing and R & D may yet be India's best chance of climbing on to the advanced defence technology bandwagon.

CHAPTER V
CONTOURS OF INDIA'S MARITIME MILITARY STRATEGY 2025

The maritime strategy of the IN until 1990 reflected the realities of the Cold War era as also our own geopolitical and geo-economic realities. India was a closed economy, almost entirely dependent on the Soviet bloc for its weaponry. The IN's vision was limited to the IOR and its posture, apart from putative attempts at sea control, was largely defensive and only partially integrated with the other two Services.

The strategy enunciated in 2006 witnessed a clear departure from the Cold War era 'stand alone' mentality. The new globalised, resurgent and confident India was reflected in the advocation of enhanced engagement with maritime neighbours and major maritime powers. A number of key concepts such as phased operations, Maritime Domain Awareness (MDA), the relevance of the Indian Navy in continental wars and 'jointness' were also advanced in the strategy.

The principal drivers of our maritime strategy in 2025 (in the light of conclusions drawn from earlier chapters), will be: need for credible deterrence to balance the power equation in Asia; primacy of energy and food security; globalisation driven global and regional security imperatives; the need to counter asymmetrical warfare; the challenges of climate change; and the requirement to leverage technology to meet our strategic objectives. The major objectives of our maritime strategy in 2025 are likely to be:

- Achieve credible deterrence – both strategic and conventional against potential adversaries;
- Ensure substantial contribution to winning the nation's maritime and continental conflicts in a joint scenario;
- Defend our maritime interests;
- Build strategic partnerships with selected maritime powers and IOR littoral navies;
- Hone capabilities against non-state actors and asymmetrical warfare;
- Contribute to global stability;
- Leverage technology to achieve its objectives.

There are several substantial differences in the 2025 strategy from previous strategies. The *first* is a need for a global (as against an IOR-centric) area of interest for the IN due to the likely global range of interests in that period. The *second* is a need to deepen international maritime cooperation with selected maritime powers in order to harvest greater benefits from such interaction. *Thirdly*, there is a requirement to build credible and concrete capabilities, because for a global power of significance tokenism will not suffice. By 2025, even at the risk of foreclosing some options, the IN should concentrate on being able to offer a range of 'doable' alternatives that policy makers can turn to, in a given maritime circumstance or national crisis. *Finally*, the centrality of technology as a means of achieving strategic

autonomy has been brought to centre stage. A tabulated comparison between the proposed 2025 strategy and earlier strategies is shown below for easy comprehension.

PROGRESSION OF INDIA'S MARITIME STRATEGY		
Strategy in War		
Objective: **Win the country's wars in either a maritime or continental scenario**		
Pre-1990	**2006**	**2025**
• 'Distant' sea control for SLOC protection • Convoying if required • Sea denial against stronger adversary • Use of maritime power for land operations a subsidiary mission	• 'Phased operations' – information dominance followed by sea control and sea denial missions, (as precursor to littoral warfare or expeditionary operations in continental wars as primary mission) • Energy SLOC protection (including convoying) • SLOC *interdiction* seen as being of limited benefit due likely short term nature of conflicts • 'Jointness' seen as vital in future operations	• Concept of phased operations retained – information dominance followed by sea control and sea denial missions, which would be precursor to littoral warfare or expeditionary operations in continental wars • *Both* protection (including convoying) and **interdiction** of hydrocarbon SLOCs seen as a necessary strategies • Food security introduced as an important mission • Information and space warfare seen as important fields of warfare
Objective: **Defend Maritime Interests**		
• Coastal sea control to protect own island territories and coastal infrastructure	• Protection of coastal maritime infrastructure by Coast Guard with IN responsible for offshore defence	• Combined effort by IN, Coast Guard, Maritime Police to sanitise EEZ by MDA through networking (satellites, radar, UAVs, USVs) with IN Special Forces to tackle hi-intensity or WMD threats in peace and war

Strategy in Peace		
Objective. **Areas of Interest**		
Pre-1990	**2006**	**2025**
• The IOR	• Primarily the IOR and adjoining choke points	• Global interests will dictate global areas of interest though the IOR will remain the area of primary interest
Objective. **Deterrence**		
• Through conventional capabilities	• Through nuclear and conventional capabilities	• Seen as mission of primary importance to be met through nuclear and conventional capabilities • Necessity to ensure credibility of deterrence though technological self-sufficiency emphasized
Objective. **International Maritime Cooperation**		
• Interaction with foreign navies recommended in a limited 'Cold War' format through joint exercises and training	• Partnerships with major regional and extra-regional maritime powers espoused as a major role • Focus on reducing influence of 'inimical' powers in IOR	• Strategic partnerships with relevant maritime powers *across the globe* to include intelligence, MDA sharing, logistics support and training • Ensuring transparency to build trust within region emphasized • Focus on BIMSTEC countries to squeeze China's strategic space
Objective. **Contribute to global stability**		
• Not envisaged	• Only contribution to regional stability in IOR through cooperation with extra-regional and regional maritime powers recommended	• Active participation in UN operations suggested • Likelihood of partaking in intervention or stabilization operations, alone or with 'coalition of the willing'

Objective. **Maritime Domain Awareness (MDA) including Net-centric Operations and intelligence**		
Pre-1990	**2006**	**2025**
• Surveillance of IOR by long range maritime patrol aircraft and intelligence gathering ships	• Concept introduced as vital for success of peacetime and wartime operations • Strategic, operational and tactical levels of MDA identified • MDA to be achieved through long and short range maritime patrol aircraft, UAVs and satellites in the future • NCO to link all platforms and collate picture	• Reiterated as being inescapable for peacetime and wartime operations • Focus on MDA in the EEZ at the operational level emphasised as being vital for countering asymmetrical warfare • NCO to progress to multi-media linkage and cooperative engagement capability • MDA cooperation with maritime powers and IOR littorals recommended
Objective. **Counter non-state actors and asymmetrical warfare**		
• Not specifically defined	• Mentioned as an important mission under constabulary role • LIMO role by IN. Close coast role by Coast Guard	• Recognised as a separate 24x7 mission to be executed in concert with Coast Guard and Coastal Police using IN Special Forces capable of countering conventional (and possible WMD threat) in maritime domain
Objective. **Meet maritime challenges of climate change**		
• Not envisaged	• No mention of climate change	• Specific attention to challenges of climate change such as rise in sea levels, emission standards, opening of new sea routes, changes in oceanography, etc. recommended.
Objective. **Humanitarian Assistance & Disaster Relief (HADR)**		
• Included under 'constabulary' role	• Recognised as a separate mission under 'Benign Role' and build-up of capabilities recommended	• Build-up of credible capabilities for HADR empahsised view increased intensity of disasters due to climate change

Strategy for Force Build-up		
Objective. **Defence technology acquisition to achieve maritime strategy objectives**		
Pre-1990	**2006**	**2025**
• Achieving self-reliance in defence technology through indigenization emphasized	• Specific areas of warfare and technology identified for attention to include MDA, reach and sustainability, ASW operations, anti-air operations, expeditionary operations, Special Operations and MCM warfare • Achievement of self-reliance and indigenization emphasized though public-private partnerships within the country	• Technology identified as a pre-requisite for strategic autonomy and credible deterrence in the 21st Century • Space and information warfare added to earlier identified areas of warfare in 2006 strategy • Specific areas of technology identified for attention • Achievement of self-reliance through collaboration *with overseas and private partners* recommended • Re-structuring of DRDO to allow private participation in R & D and creation of a DARPA-type organization to look at future technologies recommended

Some of these major differences are discussed in detail in succeeding paragraphs.

Expansion of Areas of Interest

India is projected to be the fourth largest economy in the world by 2025, when her expanding global economic footprint will mandate the IN's presence in many areas across the globe. Consequently, while the IOR will remain central in the country's strategy, it will need to focus on new areas – far removed in the geographic sense, but very close in economic and technological terms – for trade, food and energy security and technology requirements. In 2025 while the Persian Gulf will remain India's major source of oil, it would have diversified procurement

of energy sources including oil, LNG and coal to areas such as Siberia, West Africa, South America, Australia and possibly the Arctic. India could be collaborating closely for food security with Australia, Argentina, Canada and the US. Her major trading partners would be the US, China, EU, ASEAN, Brazil and Mexico and India would be sourcing weapons and collaborating in production of defence equipment with Russia, Israel, France, Italy, Spain, US and UK.

Globalisation is another factor which is 'making geography history' by enabling the shifting of thousands of jobs (and Indians) across the globe. Especially in the IT sector, India is graduating from a 'back office' for developed countries to doing more and more of the West's 'mission critical' work. Within the next decade, this will provide India greater geopolitical leverage than ever before. Indeed, some analysts predict that like oil, IT too will soon become an indispensable resource, and 'IT security' will join the lexicon of national security issues.[90]

To protect the country's future global interests, the Indian Navy will have to build maritime capability of global reach and sustenance. Centred on capable three-dimensional blue water forces, it will necessitate logistics and maintenance facilities across the globe to facilitate its sustenance. In sum, *to be effective on a global scale, we will need global partnerships*. We need to start thinking about the '*who*' and '*how*' of these partnerships *now* and this brings us to the issue of maritime cooperation.

Selectively Deepening International Maritime Cooperation

In a globalised world, no nation is an island, howsoever great its individual power – one of the six imperatives listed in the new strategic concept paper published jointly by the US Navy, Marine Corps and Coast Guard is to 'foster and sustain cooperative relationships with more international partners'.[91] The US Navy is also pushing the idea of a 1,000 ship navy with the underlying premise that a wide range of maritime-related security threats can be best met with the involvement of partner nations' forces.[92] By 2025, unless China develops into a direct threat, India is unlikely to become part of any security alliance or coalition. However, it will need to develop strategic partnerships with key maritime nations in order to be an effective leader in the region.

India's maritime engagement with ASEAN navies and the US Navy after the Cold War played a key role in catalysing relations with these countries. The 2007 strategy clearly identified the need to build maritime relationships to shape the maritime battlefield, restrict maritime influence of likely adversaries and engage

extra-regional navies to her benefit. However, while the IN has signed a plethora of agreements with navies across the globe, and has taken initiatives to synergise international maritime cooperation[93], India's political aversion to be seen as part of any alliance and reluctance to be pro-active has prevented it from harvesting the entire range of strategic benefits that could have been gained. At best, the IN has achieved inter-operability with some maritime forces, created a few equipment dependencies with smaller IOR countries, and sustained good relations through training assistance programmes.

The current reluctance being shown by India to accede to the Logistics Support Agreement (LSA), the Communication, Interoperability and Security Memorandum of Agreement (CISMOA) or the End-use Verification Agreement (EUVA)[94] with the US is an example of this malaise. By 2025, such arrangements will be as useful to India as it is to the US today. The fact remains that despite India's strategic maritime location, its unwillingness to engage with western maritime powers in the Arabian Sea in a meaningful manner has prevented it from extracting any strategic advantage from their presence, such as intelligence sharing, technology acquisition, or even pressuring Pakistan on terrorism. Ironically, India's reticence to engage deeply with the West has also alienated it from several 'West-sceptic' countries who perceive India as having moved too close to the West[95], showing that *partial engagement will only lead to partial gains*.

Expanding cooperation into areas of logistics support, information sharing, maritime domain awareness and inter-operability to enable combating non-state actors and asymmetrical warfare, all of which require closer engagement, is the way forward. Such a strategy, especially in the BIMSTEC zone, would help in rolling back Chinese influence in a more aggressive manner. At the same time, it is very important that the IN's strategy and force build-up be progressed on a foundation of transparency and trust, to reassure IOR littorals such as Indonesia, Myanmar, Malaysia, Bangladesh and Maldives, about its intentions. More frequent and prolonged deployments east of the Malacca Strait and closer engagement with Vietnam, Japan and Russia will also be necessary to add credibility to the IN's deterrence posture.

Thus far India has been a linesman in the international arena, primarily engaged in blowing whistles at the major players with limited efficacy. India has now emerged as a major player in its own right, but its polity has not managed to keep pace with its new economic and strategic realities. In the future, we will need to take more definite positions on contentious international issues and this transformation is expected to happen over the next few decades. Many

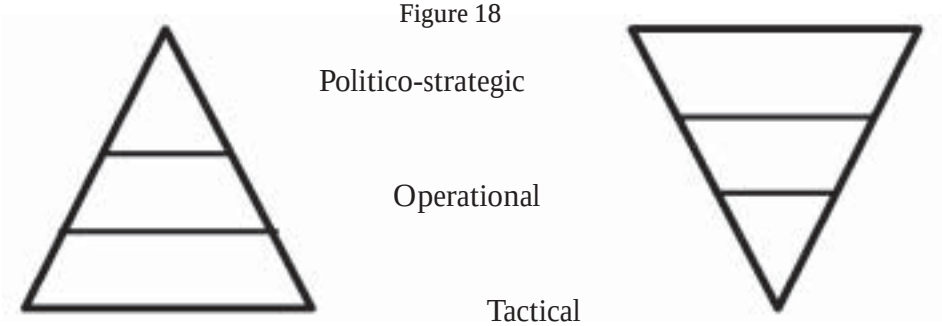
manifestations of a more active role in international affairs will impact on the maritime arena, for which the Indian Navy should start preparing now.

Expansion of Maritime Domain Awareness (MDA)

The 2006 strategy had introduced the concept of MDA at three levels – strategic, operational and tactical. While continuing with the same concept, the future scenario of asymmetrical warfare and threats from non-state actors warrants continuous surveillance of India's zones of maritime interest in the years ahead. By 2025, in close collaboration with the Indian Coast Guard and coastal police, the IN should have achieved the capability to track, identify and prosecute (when necessary) *all* vessels (including coastal craft and fishing vessels) within 200 nm of its coast. This needs to be done by using a network of coastal radars, UAVs and USVs, supported by IMO-mandated Automatic Identification Systems on ships above 300 GRT and government sanctioned transponders on smaller vessels (as has already been done by the Government of Maldives). The IN should also have a networked capability of monitoring all shipping across the IOR using long-range identification and tracking systems[96] and surveillance satellites. Creation of MDA-cooperation networks with maritime neighbours and key maritime powers under our leadership in the IOR, as has been done by the European Maritime Security Agency and Italy in the Mediterranean Sea,[97] will be of significant national (and regional) benefit and needs to be pursued.

The 2006 strategy recommended networking of all IN units – afloat and ashore – with the aim of achieving the capability of exchanging information between platforms in all three dimensions and shore headquarters using a dedicated indigenous naval satellite. The 2025, strategy aims to have this capability fully operationalised, with bandwidth capable of multimedia link between units, and the core of a cooperative engagement capability.

Figure 18



Inversion of the traditional construct between the different levels of warfare

Focus on Intelligence. In the post-Cold War era the level of activities between the different levels of warfare-politico-strategic, strategic, operational and tactical – has been inverted, with the majority of activities now at the politico-strategic level and the least at the tactical level. In the Cold War era, 80% of intelligence on an adversary was available due to it being a state. Today, with non-state actors as the major adversary, only 20% of intelligence is available necessitating greater effort to combat possible threats. Both these developments imply that acquisition and analysis of intelligence, always an important task, will assume critical proportions by 2025. A dedicated and specialised intelligence apparatus in the maritime domain covering all aspects of intelligence – human, technical and cyber – will be a key capability to counter asymmetric warfare and terrorist activities besides providing accurate information on hostile state actors.

Changes in Strategy for War – 2025

Phased Operations. The 2007 strategy introduced the concept of phased operations – information dominance followed by sea control and sea denial missions, which would be precursor to littoral warfare or expeditionary operations in continental wars. This concept is seen as being relevant in 2025 also. In addition, information and space warfare are seen as important fields of warfare in 2025 for which the IN will have to build requisite capabilities.

Figure 19

Proposed Gwadar-Xinjiang and Myanmar-Kunming oil and gas pipelines

SLOC Protection/Denial Capability. The 2006 strategy had concluded that while SLOC protection as a mission was necessary, SLOC interdiction would have limited validity in a short-duration war. However, *both* SLOC protection (including convoying) and interdiction of hydrocarbon SLOCs are seen as viable strategies in 2025 due to heavy import dependency of potential rivals. Chinese SLOCs through the Indian Ocean, whether originating in the Persian Gulf or West Africa, are critical for their energy security. The two energy corridors being contemplated by China – Gwadar to Xinjiang and Myanmar to Kunming – are primarily to shorten their SLOCs and thereby limit their vulnerability to interdiction. Establishment of such energy corridors would certainly presage the deployment of Chinese Naval forces in the IOR. If anything, the IN's three-dimensional SLOC interdiction capabilities could 'persuade' an adversary to consider a strategy of cooperation as opposed to confrontation. For the IN, the Pakistan Navy's (PN) strategy of sea denial using submarines and missile armed maritime patrol aircraft makes anti-submarine warfare and carrier-borne interceptors a priority area of this three-dimensional capability.

Joint Expeditionary Warfare Capability. By 2025, to achieve a true deterrent capability and retain relevance in continental wars, the Indian Navy needs to have the capability of landing a brigade plus 'marine' force on a hostile shore and supporting it for a minimum period of four weeks from the sea. An expeditionary capability will also provide the sealift for the envisaged 'Joint Rapid Deployment Force' and mastery of such operations in all their complexity will also be a major step towards achieving 'operational jointness'.

Changes in Strategy for Peace – 2025

Strategic and Conventional Deterrence. While deterrence has been a traditional role for navies over the ages, it is seen as a mission of primary importance in 2025 through *both* conventional and nuclear capabilities. The requirement of an undersea deterrent to complete the triad of nuclear forces has already been spelt out in India's Nuclear Doctrine. In the emerging security environment, strategic deterrence through a second strike capability will be of vital importance and by 2025 the IN should be able to field such a deterrent with its associated infrastructure.

Countering Asymmetrical Warfare. In the coming decade maritime activities by terrorist organisations is likely to increase as they will be more and more

circumscribed on land. Conventional high value platforms are inadequate to counter such activities – asymmetrical threats will need to be countered by 'asymmetrical advantages' in the areas of intelligence, surveillance and precision strike capabilities. The 2006 strategy had delegated close coast operations to the Coast Guard with the IN responsible only for protection of offshore infrastructure and Low Intensity Maritime Operations (LIMO). In 2025, asymmetrical warfare (including its WMD dimension) will be a 24x7 mission for the IN to be executed in concert with Coast Guard and Coastal Police. Quick reaction Special Forces will be an important capability both in peace and war. While India has not agreed to participate in the Proliferation Security Initiative, both the Suppression of Unlawful Activities Convention 1988 (upgraded to include WMD in 2005) and the 2004 UN Security Council Resolution 1540 authorises states to promulgate national ordinances to deal with the menace of WMD terrorism, including robust inspection of ships[98] and the IN will need to prompt domestic legislation in this regard.

Humanitarian Assistance & Disaster Relief (HADR). Among the principal lessons learnt in the aftermath of the 2004 tsunami was the need of appropriate platforms for ship-to-shore movement. The 2007 strategy recognised the salience of HADR operations for the IN and correctly identified that ship-to-shore capability in the form of LPDs, heavy-lift helicopters and air cushion vehicles, acquired for littoral warfare, could also be used for future HADR operations. By 2025 such capabilities will need to have been realised, especially as natural disasters are expected to increase in frequency and intensity because of global warming.

Climate Change. Climate change related issues will be a significant factor by 2025 requiring the bolstering of the IN's capabilities in meteorology, oceanography and hydrography. Implications of sea level rise need to be addressed now, especially for infrastructure projects on the anvil. Ideally, a separate cell for climate change should be established (or the job outsourced) to look at the impact on India of issues such as changes in maritime geography, oceanography and opening up of new ocean passages.

Changes in Strategy for Force Build-up

The IN will not be able to meet its strategic objectives unless it achieves strategic autonomy due to technology independence. Technology needs to be looked at in two broad ways as far as the IN is concerned, and both ultimately relate to its deterrence (and war fighting) capability. The first is the need to equip its forces with the best available technology, for in the future technological asymmetry would

be a cause of conflict due to the breakdown of deterrence. The second is the technological capability to maintain equipment and weapons in an operational state, to ensure the credibility of our deterrence.

Acquisition of Key Defence Technologies. After analysing the likely nature of future warfare, key defence technologies and equipment, required in the Indian context are evident. These include: information and communication technology (ICT); simulators; unmanned vehicles; alternate propulsion (primarily nuclear and electric); satellite communication, reconnaissance and navigation technology; new materials; robotics; nanotechnology; stealth technology; precision munitions; nuclear weapons technology; and BMD and BMD defence technology. The list cannot be exhaustive and only represents the major technologies that need to be harnessed.

From Self-reliance to Collaboration. Foreign collaboration having been allowed in defence production, we need to shift from the philosophy of self-reliance to collaboration and build long-term partnerships to enable infusion of new technology in defence equipment. There is also an urgent need to: identify and nurture critical technologies; synergise public-private partnerships; fund R & D in the private sector to provide impetus to innovation; and encourage joint procurement to increase cost-effectiveness and efficiency. Such partnerships are even more important in the face of non-state actors and terrorists whose innovative methods, dictated by their funding and time constraints, weave webs around more wooden state actors.

Self-sufficiency in Maintenance. The capability for in-house repair of all our equipment and its exploitation in the manner of our choosing will be critical to ensuring the credibility of our deterrence and the autonomy of our strategy. Consequently, indigenisation efforts will need to be focussed on ensuring the maintainability of all existing equipment within the country, not on R & D or production of new equipment.

CHAPTER VI
CONCLUSION

While the future is not knowable, as we advance into the *mare incognitum* of tomorrow, it is better to have general and incomplete map, subject to revision, than to have no map at all.[99] Accordingly, this paper has sought to outline the contours of India's maritime military strategy by the first quarter of the 21st century.

The aim has been to identify strategic, operational and technological priorities, which would then assist in the optimum selection of equipment, training of manpower and design of operational practices. A rigorous analysis of present and forecasted geopolitical, geo-economic, warfare and technological trends has brought out several drivers, which are likely to steer India's maritime military strategy in 2025. These include: credible deterrence to balance the power equation in Asia; energy and food security; globalisation driven global and regional security requirements; asymmetrical warfare; climate change; and technology.

By 2025 India will be the world's fourth largest economy[100], with significant dependence on the seas for economic growth and well-being and national security and international obligations, thereby making the IN a key national instrument of national security. The IN will have to refine its current strategy to take into consideration the new strategic realities, and the broad contours of the 2025 strategy have been suggested in this paper. While many objectives will remain the same as earlier strategies due to the unchanging nature of the maritime environment, there are significant differences as well as several different nuances to existing objectives. These distinctions have been explained in detail in the preceding chapter and also tabulated for easy comprehension. The substantial differences in the new approach are principally in the global (as against an IOR-centric) approach; the emphasis on building *credible* capabilities for deterrence and against asymmetrical warfare; the need to deepen some existing partnerships; and the centrality of leveraging technology to ensuring India's strategic autonomy.

It is important to remember that formulation of maritime strategy of any country needs to be an iterative progress, constantly evolving with the strategic realities of the time. The new realities of the first quarter of the 21st century will bring forth new challenges, which the IN is well placed to take advantage of, provided it prepares for them through intelligent analysis and diligent preparation. It is hoped that by forecasting and foreseeing the future environment the Indian Navy will be able to make more educated choices for the challenges ahead, for which work needs to begin now. Such an exercise needs to be a regular feature if the IN is to chart the opportunities and shoals that lie ahead in good time, so that it can steer an appropriate course and steam triumphantly into the future.

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CAREER IN THE ARMED FORCES: A PARADIGM SHIFT

By
Brig SK Wadhawan

INTRODUCTION

The Armed Forces have always been considered as a respectable, prestigious and a satisfying profession. Despite the arduous life and the risk associated they have always managed to attract the youth of the country. In fact, defence used to be a profession favoured by the royalty and used to attract its share of princes and nobility. While the composition of the forces might have become much more egalitarian today, they undoubtedly continue to hold a charm of their own and attract their share of class and talent. But the past few years have seen some phenomenal changes happening in the globe, which have thrown up many other avenues for the youngsters. At the same time, the Services have suffered from their own set of problems, be it the restricted budgets or the growing shortages in manpower.

The Armed Forces have been facing a major intake crisis at regular officer training academies and now struggling to fill short service commission officers of engineering.[1] Symptoms of growing ailments have been surfacing with increasing frequency over the last decade or so. The Sixth Pay Commission's attempts to bring about pay parity with the bureaucrats is certainly an issue but not the only issue.[2] In fact the number of officers seeking premature retirement has gone up by three times in the last five years.[3]

Evolution of Institutional/Occupational Model

Discussion of the future of the Armed Forces usually involves a concern with technological developments or global strategy. Most members of the Armed Forces, however, understand and experience the military as a social organization.

The military maintains its autonomy but also refracts societal trends. Because of this duality, two models of organization – institutional and occupational –

describe alternative conceptions of the military. The overarching hypothesis is that the Indian Armed Forces has been moving away from an institutional format to one that increasingly resembles that of an occupation.

Like other intellectual developments, this model is not received uniformly by all groups. It conflicted with the econometric mindset of the executive. A consequence of econometric analysis is to downplay the less tangible noneconomic factors and value-driven aspects of military organization. Econometric analysts prefer typically to deal with the material dimensions because they are the only ones that can be measured easily. The econometric model is a little too neat, however; it ignores the fact that the Armed Forces are not merely fluid collections of self-maximizing individuals, but sets of social relations and institutional arrangements as well.

Indeed, one writer has characterized the military manpower debate as "economics" versus "sociology". The econometric approach tends to define issues that are amenable to existing methodologies and thus concentrates on narrowly conceived comparisons of variables to the neglect of the more difficult issues of institutional change and civilian-military relations.

In recent decades, the members of the Armed Forces have felt increasing conflict between internal pressures toward institutional integration and societal trends that push toward identification with like occupational groups in the larger society. The argument about the proper relationship between the service member's internal ties within the military and his external links with those outside the military – between institution and occupation – will never reach a clear-cut conclusion. Most of the time members of the military will prefer something of each. The pressing question is this: does a tilt toward civilianization make any real difference in military effectiveness? We think that it does. The results of creeping occupationalism can be found in three key areas: mission performance, member motivation, and professional responsibility. From the standpoint of mission performance, the basic assumption (well grounded in research) is that institutional identification fosters greater organizational commitment and performance than does occupational. The Armed Forces require certain behaviour from their members that can never be made to serve individual interests, certainly not in a narrow economic sense. Internalization of institutional values implies nearly unbounded definitions of tasks and the manner in which these tasks are to be carried out. The logic of occupationalism, conversely is to define task boundaries and to set standards of accomplishment that, if met, signify adequate performance. In general, an

occupation pays enough to fill the job and to get it done – no more. An effective manager in an occupation prevails on workers to do what they are supposed to do; an effective leader in an institution motivates members to do more than they are supposed to do.

A second effect of occupationalism is to mask organizational developments that replace the intrinsic motivation of an institution with the extrinsic motivation of an occupation. A large body of social psychological research documents the difference between intrinsic motivation, as in action due to personal values, and extrinsic motivation, as in behaviour brought about by pay. Extrinsic rewards, moreover, can weaken intrinsic motivation. A third consequence of occupationalism is somewhat more insidious – the undermining of military professionalism. If military functions can be reduced to dollars, then ultimate decisions on the military organization and military personnel become the province of cost-benefit analysts; decisions are removed from the military profession. An institutional approach, on the contrary, never loses sight of the uniqueness of military organization in a democratic society. The nation has entrusted its Armed Forces with responsibilities rarely, if ever, found in civilian life: defending the national interest, the real possibility that military members will risk life and limb in that role, and, in recent years, the awesome responsibility of deploying and guarding the nuclear arsenal.

Aim

To analyze the institution of the military and the occupational stresses of the society making a career in the Armed Forces less attractive.

Objectives of the Study

The objectives of the study are as under:

(a) What are peculiarities and strengths of the Institution of Military?

(b) What relationship does it have with other agencies at various levels which influence the choice as a career?

(c) What are the occupational factors affecting the Armed Forces intake?

(d) What are the responsibilities and actions to be taken by the government/ other agencies to make it an attractive career?

(e) What measures must the Military Institutions take to reverse/contain the trend?

Hypothesis

Occupational rather than Institutional factors make career in the Armed Forces attractive.

Scope

The scope is restricted to a focused study of the shortage of officers, other than those from Army Medical Corps (AMC), Army Dental Corps (ADC), Judge Advocate General's Branch (JAG) and other miscellaneous cadres. Only important in-service conditions are being analysed for relevant recommendations.

Methodology

The study primarily utilises literature survey to test the hypothesis. It is supplemented by important inputs from officers from foreign countries attending the 48th NDC Course (during 2008).

Sources of Data. Secondary data has been used from various defence journals, magazines, books and information provided by Ministry of Defence to Parliament. Primary data has been collected from course members from foreign countries attending the current NDC Course.

Data Analysis. Analysis of the data has been attempted based on a descriptive manner and in terms of percentages and ratios for comparison, wherever applicable.

Chapterisation

The chapters of the study have been structured as under:

Chapter I : Institution and Occupational Aspects in the Armed Forces

The contrast between Institution and Occupation is easy to overstress, however to characterize the Armed Forces as either an institution or an occupation is to do an injustice to reality. Both elements have been and shall always be present in the military systems. This chapter endeavours to bring out the relationships and differences between Armed Forces as an Institution and other professions which are based on occupational models.

Chapter II : At the Threshold of Occupational Trends

This chapter would illustrate the image of the Armed Forces based on surveys and data. It would further analyze the social organizational changes at the macro, meso and micro levels and to highlight the implications. The political bureaucratic

management of the Armed Forces at the macro level causing a loss of professional autonomy of the military. This results in organizational deficiencies at the core formation of the Armed Forces at meso level. These changes are reflected by professional identities and commitments of its members at micro level.

Chapter III: Institution Building of the Armed Forces in the Occupational World

While considering the issue of institution building in military systems, focus is on the idea of integration. The society and the military from where it draws its members need to be integrated as also the components within the Armed Forces. A model or the way ahead to build the institution of the armed forces including character building and relevant aspects of existing frictions/anomalies would be analyzed.

Chapter IV: Recommendations & Conclusion

The I/O thesis provides interaction of institutional and occupational trends is not deterministic, but portends a wide variety of potential outcomes. Building institutionalism does not mean that all aspects of occupationalism must be discarded; neither is it necessary to treat the I/O thesis as producing detailed policies of change to cover all contingencies. When ways to reinvigorate institutionalism are found, they will grow from an understanding of how organizational policies shape the behaviour of military members, which in turn affects military effectiveness. To gain leverage against policies that foster overstated occupationalism, military leaders in particular need a place to stand.

CHAPTER I
INSTITUTION AND OCCUPATIONAL ASPECTS IN THE ARMED FORCES

The argument is that the Indian Armed Forces are moving from an organizational format that is predominantly institutional to one that is becoming more and more occupational. The contrast between institution and occupation is easy to overdraw. To characterize the Armed Forces as either an institution or an occupation is to do an injustice to reality. Both elements have been and always will be present in the armed forces. But the social analyst must always use pure types to advance conceptual understanding. Our concern is to grasp the whole, to

place the salient fact, and to have a framework to appraise the relevant policy. Even though terms like institution or occupation have descriptive limitations, they do contain core connotations that serve to distinguish each from the other.

The essential differences between institutional and occupational (I/O) models of Armed Forces organization are phrased in terms suitable for cross-national research.[4] These differences are summarized in Table 1. The I/O thesis assumes a continuum ranging from an Armed Forces organization highly divergent from civilian society to one highly convergent with civilian structures.

Concretely, of course, Armed Forces have never been entirely separate or entirely coterminous with civilian society, but the conception of a scale along which the Armed Forces more or less overlaps with civilian society, highlights the ever-changing interface between the Armed Forces and society. This also alerts us to emergent trends within the Armed Forces organization. Over the years, incremental developments slowly amount to profound changes. A shift in the rationale of the Armed Forces toward the occupational model implies organizational consequences in the structure and, perhaps, the function of Armed Forces.

TABLE1. Armed Forces Social Organization: Institutional vs. Occupational

An institution is legitimated in terms of values and norms, that is, a purpose transcending individual self-interest in favour of a presumed higher good. We use institution here in the sense it usually possesses in everyday speech. Members of an institution are often seen as following a calling captured in words like duty,

Variable	Institutional	Occupational
Legitimacy	Normative values	Marketplace economy
Societal regard	Esteem based on notions of service	Prestige based on level of compensation
Role commitments	Diffuse; generalist	Specific; specialist
Reference groups	"Vertical" within the Armed Forces	"Horizontal" with occupations outside the Armed Forces
Recruitment appeals	Character qualities; life-style orientation	High recruit pay; technical training
Evaluation of performance	Holistic and qualitative	Segmented and quantitative
Basis of compensation	Rank and seniority; decompressed by rank	Skill level and manpower shortages; compressed by rank

Variable	Institutional	Occupational
Mode of compensation	Much in noncash form or deferred	Salary and bonuses
Legal system	Armed Forces justice; broad purview over member	Civilian jurisprudence; limited purview over member
Female roles	Limited employment; restricted career pattern	Wide employment; open career pattern
Spouse	Integral part of Armed Forces community	Removed from Armed Forces community
Residence	Work and residence adjacency; Armed Forces housing; relocations	Work and residence separation; civilian housing permanence
Post-service status	Veterans benefits & preferences	Same as nonserver

honor, and country. They are commonly viewed and regard themselves as being different or apart from the broader society. To the degree institutional membership is congruent with notions of self-sacrifice and primary identification with one's institutional role, institution members ordinarily enjoy esteem from the larger society.

Armed Forces service traditionally has acquired many institutional features, for example, fixed terms of enlistment, liability for 24-hour service, frequent moves of self and family, subjection to Armed Forces discipline and law, and inability to resign, strike, or negotiate working conditions. When grievances are felt, members of an institution do not as a rule organize themselves into interest groups. Rather, if redress is sought, it takes the form of personal recourse to superiors, with its implication that the organization will take care of its own. Above and beyond these conditions, of course, there are the physical dangers, inherent in combat training and actual combat operations.

Moreover, a paternalistic remuneration system, corresponding to an institutional model, evolved in the Armed Forces: much of compensation is non-cash ("in kind") – such as food, housing, uniforms, and medical care; subsidized base consumer facilities; payment to service members partly determined by family size; and a large proportion as deferred pay in the form of retirement benefits. To the degree Armed Forces service is based on the citizen-soldier concept, pay for recruits is below the market wage, although there may be post service benefits. Notions of overtime pay are alien to the institutional Armed Forces. In addition,

unlike many civilian compensation systems in which marketability determines reward, remuneration in the Armed Forces is essentially based on rank and seniority.

An occupation is legitimated in terms of the marketplace. Supply and demand, rather than normative considerations, is paramount. Workers with equivalent skill levels ought to receive approximately the same pay, whatever the employing organization. In a modern industrial society, employees usually enjoy some voice in the determination of appropriate salary and work conditions. Such rights are counterbalanced by responsibilities to meet contractual obligations. The cash-work nexus emphasizes a negotiation between individual (and workers groups) and organizational needs. The occupational model form of interest articulation is the trade union. The occupational model implies the priority of self-interest rather than that of the employing organization.

The occupational Armed Forces model is anchored in marketplace principles. Whether under the rubric of econometrics or that of systems analysis, such redefinition of the Armed Forces is based on a set of core assumptions: (1) no analytical distinction exists between the Armed Forces and other systems, in particular, no difference between cost-effectiveness analysis of civilian enterprises and Armed Forces services; (2) Armed Forces compensation should as much as possible be in cash, rather than in kind or deferred, thereby allowing for a more efficient operation of the marketplace; and (3) Armed Forces compensation should be linked directly to skill differences of individual service members.

Institutional and Occupational Militaries Compared

Despite certain exceptions, the conventional system of Armed Forces compensation reflects the corporate whole of Armed Forces life. The Armed Forces institution is organized vertically, whereas an occupation is organized horizontally. People in an occupation tend to feel a sense of identity with others who do the same sort of work and receive similar pay. Horizontal identification implies key reference groups are external to the organization. In an institution, on the other hand, it is the conditions under which people live and work that develop the sense of identity that binds them together. The organization one belongs to creates the feeling of shared interest, not the work performed. In the Armed Forces, the very fact of being part of the same organization has traditionally been more salient than the fact that Armed Forces members do different jobs.

Role commitment in institutional Armed Forces tends to be diffuse; members are expected to perform tasks not limited to their Armed Forces specialties. Members

are under the purview of the Armed Forces organization whether on or off duty. In occupational Armed Forces, role commitments tend to be job specific. The organization is not concerned with the worker's behaviour away from work if it does not affect job performance.

In an institutional Armed Forces, work and residence locales are adjacent. Members typically reside in Armed Forces housing. Frequent relocations are understood to be part of Armed Forces life. The on-base Armed Forces club is often a center of social life. An occupational Armed Forces has much more separation of work and residence locales. Members often live off base in rented or owned civilian housing. Permanence of residence becomes a value. Recreational social life takes place off base.

In a manner of speaking, the role of institutional membership in the Armed Forces community extends to spouses (until very recently, almost always meaning wives). They are expected to initiate and take part in a panoply of social functions and volunteer activities in the Armed Forces community. Armed Forces families are supportive of, or adjunct to, organizational purpose. In the occupational Armed Forces, however, wives at both noncommissioned and junior officer levels are increasingly reluctant to take part in customary social functions. With a rising proportion of wives employed outside the home, moreover, fewer wives have either the time or the inclination to engage in the volunteer work that underlies much of the social life of Armed Forces installations.

In a traditional Armed Forces, women service members are small in number and assigned to limited support roles, often in separate female corps. Career patterns are prescribed and restricted. In an occupational Armed Forces , both recruitment needs and greater entry of women in the labour force lead to a higher proportion of female service members. Female corps are abolished, and women are much more integrated into mainstream roles. Combat exclusion strictures, however, still work against completely open career patterns. Accordingly, pressures to do away with female combat exclusion become stronger.

An institutional Armed Forces tends to evaluate its personnel according to "whole person" criteria, to rely heavily on qualitative and subjective evaluations, and to favour decentralized promotion systems. An occupational Armed Forces tends toward judgments relating to specific performance standards, prefers numerical or quantitative evaluations, and favours centralized promotion. The more institutional an Armed Forces, the wider the span of the Armed Forces justice system; the more occupational the Armed Forces, the more likely it is that

offenders will be tried by civilian courts. In a society characterized by an institutional Armed Forces, prior Armed Forces status carries over into civilian life; veterans will enjoy preferences over nonveterans, especially in government employment and entitlements.

The Changing Scenario in the Civvy Street

There was a time when the Services offered a type of lifestyle and a set of facilities, which were just unthinkable in any other civil job. There was a certain glamour associated with the Services, which the others yearned for. But the rapid industrialization of the country in the past few years has definitely reduced, if not altogether removed, the edge, which the Services enjoyed. A job of equivalent responsibility in the corporate sector would fetch a young man a much higher pay packet, more attractive perks and most importantly, the flexibility to move on to another company if he doesn't like the job. Also, these companies are result-oriented and one's progression upwards is determined by performance rather than time bound guidelines. These companies seem to have picked up quite a few lessons from the Services but have equaled and even surpassed the Services in the quality of facilities that they are offering to their employees. Good clubs, foreign assignments (and foreign holidays), sports facilities and adventure activities are no longer the exclusive domain of the Services.[5]

An Armed Forces professional cannot serve his country if he is not aware of his strength and weaknesses, fears and apprehensions. The Armed Forces as an organization are like a joint family which is the true reflection of the image of its members. So the image of Armed Forces is the reflection of the character of its soldiers. It has been observed over a period of time that the moral and ethical health of an organization is falling day by day. If the present trend of declining ethical standards continues in future, there is a danger of getting the fabric of our great Armed Forces heritage tarnished. There is a need to evaluate the present situation and accordingly work out a solution to the weak areas.

The changing socio-economic values are threatening to take their toll, by gradually separating the service ethos from its traditional values. We seem to be losing track of the cardinal principle of human philosophy, therefore, shaping of values and perception must take precedence, because ethics has a special meaning to the profession of arms. The Indian Army has lived with these values and excelled in all fields since independence. This reveals the relevance of character values in today's modern army. Army as a profession has a very high sense of purpose which

demands certain qualities and characteristics like courage, sense of duty, professional competence, initiative, loyalty and discipline.[6] Due emphasis is being given to qualities of leadership during selection of men in the Indian Army. The core values or ethos of the Armed Forces flow from these considerations. The important thing to notice here is that these virtues are obvious because they are a functional necessity. Success in battle is impossible without them and preparation of battle requires their inculcation. These moral virtues are not merely "nice to have" but are functional imperatives in the Armed Forces profession. History is replete with such examples where all the great emperors imbibed these values in their troops in some form or the other.

CHAPTER II
AT THE THRESHOLD OF OCCUPATIONAL TRENDS

Social Organizational Changes at the Macro, Meso, and Micro Levels: The Armed Forces

Since World War II, the status of the Armed Forces in society has changed, the importance of the Armed Forces function has declined, and the meaning of Armed Forces service is less clear than in the past. The Armed Forces is no longer viewed as a special organization that performs a unique and important function critical to the survival of our society. This redefinition has been forced by at least three major social changes. First, the nature of the Armed Forces task has changed. The major function now is to provide deterrence or accomplish some limited political objective. Hence, the Armed Forces must share responsibility for this task with politicians and diplomats. In fact, the use of Armed Forces personnel has become an option of last resort.[7] Second, technological change has fragmented the Armed Forces organizations into many specialties and has increased reliance on non-Armed Forces experts (defense contractors and technical representatives) for the development and operation of weapon systems.[8] Third, in recent years limited national economic resources have caused increasing reliance on management principles and cost analysis in lieu of Armed Forces expertise.[9] In short, the Armed Forces has become increasingly complex and more dependent on outsiders. The issue of "who is Armed Forces" and "what the Armed Forces does" is no longer clear. This confusion provides the opportunity to replace Armed Forces expertise

and values with the more widely accepted management principles and ethics characteristic of the occupational model.

In an environment where the Armed Forces function is unclear or shared with others (diplomats and technicians) and economic justification for limited resources is more important than justification based on Armed Forces expertise, Armed Forces professional autonomy is naturally questioned. In fact, much autonomy has been lost in recent years as civilian "watchdog" agencies have grown in number and power. In recent years, however, the principle of civilian control has been expanded and the cost-effectiveness of the day-to-day administration of the Armed Forces has been questioned. With this expansion of civilian control and the loss of professional autonomy, civilian business ethics and practices that characterize the occupational model have become prominent.

These macro-level changes are reflected at the meso level by changes in the definition of the core function of the Armed Forces organization. Core functions are important components of social organization because they focus organizational activities and structure. They also define what an organization is about. Over 70 percent of the officers surveyed periodically in the past ten years agree that "during (their) time in the Air Force, the prestige of the flying function has declined while that of management has increased."[10] Other indications confirm this trend toward occupational structures and norms. Junior officers, for example, tend to attribute critical job characteristics of expertise, importance, and responsibility to support jobs more often than to flying jobs. Recognition from air force leadership and from civilians outside the Armed Forces also tends to favour those in support specialties.[11] According to conventional wisdom among those in operational specialties, flying officers must serve in a support or management specialty or risk not being promoted above junior officer. Indeed, most field-grade jobs are management or administrative positions, and the chances of continuing to fly in the field-grade ranks are slim. Combat experience has suffered a similar fate; in a survey of the air force elite of the 1980s (senior officers selected for the highest level of professional development), 63 percent stated that combat experience should not be a criterion for promotion to the rank of general.[12] These changes in the relative importance of core functions signal a fundamental shift in the social organization of the air force: essentially, a civilianization of what the organization is about.

Meso-level changes in the organizational definition of the core function have predictable consequences for social organization on the micro level-specifically

the civilianization of professional identities and commitments of Armed Forces members. Again air force officers, who are the most susceptible to occupational trends, provide a clear example of the changing social order at this level. Here the key indicators of social organization are the Armed Forces members' professional identities and commitment patterns, which reflect their orientation to Armed Forces service.

It is important to measure identities because they organize individual attitudes and values and provide a normative basis for committed action. In large samples, these identities explain consistent differences in a cluster of significant attitudes. Those who have officer identities, for example, tend to report as follows:

(a) They view Armed Forces experience as a way of life, not as a job;

(b) Their air force careers provide better opportunities for interesting and challenging jobs than would civilian careers;

(c) Getting comparable jobs (in terms of importance) would be very difficult if they left the air force today;

(d) The air force does not require them to participate in too many activities not related to their jobs;

(e) Personal interests must take second place to operational requirements for Armed Forces personnel;

(f) Air force people are special;

(g) They live on base rather than in the civilian community;

(h) They plan to continue their Armed Forces service for 20 years or beyond.

By contrast, individuals with specialist identities reported the opposite attitudes (disagreement with the above statements) and indicated less interest in air force careers.

Further analysis of these identities, accomplished with interview data from a smaller sample; suggest important relationships between identities and commitment behaviour. That is, the difference in identity clearly reflects the institutional or occupational orientations of Armed Forces members.

Degradation of Value System

A prominent change has been noticed in the value system of our society in the past few decades. This change is a collective outcome of changing socio-

economic pattern of our society, which has resulted in a shift of focus from value system to the material benefits. Urbanization, increased per capita income, rapid growth of industry and commerce sector, higher level of education, inflation and breakdown of joint family system are a few factors which have contributed towards the shift of the common man from virtues to material and monetary rewards. A person placing career before honour can lead to yesmanship for commanders instead of constructive criticism. Ours is the organization which neither forces its members to compromise their ethical principles nor does it condone their unethical behaviour. The above mentioned symptoms are a few formidable hurdles in the process of producing skilled leaders, who know how to motivate the people and on whom he depends to accomplish the assigned task.

Since independence the Indian Army has seen phenomenal sociological changes. These changes have brought revolution in Armed Forces affairs, by affecting the lifestyle and expectations of the common man. Society has turned materialistic where the common man is in a blind race to acquire money and status. The present society does not identify itself with the goals and objectives of the government. Our society has become selfish, comfort oriented, concerned with personal gratification and personal success. In the present scenario money is the keystone of our society. Selfish materialism coupled with spiritual pollution cannot remain insulated from the army. Effects of such fast changing social environment and development of technology on Armed Forces personnel are more prominent in a democracy like ours, than in any other form of government. The attitude and behaviour of our soldiers have undergone perceptible changes and is beyond any doubt. The characteristic of a flexible and vibrant organization is to identify and to accept these changes in the environment and adapt itself suitably to the requirement. Therefore, before discussing the relevance of character values in the modern hi-tech army, it will be realistic to identify the behavioural pattern and the compulsions of today's soldier:

(a) Breakdown of Joint Family System

(b) Materialistic Norms

(c) Spread of Literacy

(d) Concept of Welfare State

(e) Agro Industrial Development

(f) Inflation

(g) Careerism

(h) Sycophancy

(j) Zero Error Syndrome

(k) Remedial Measures to Enhance the Value System

(l) Importance of Morals and Ethos

The Armed Forces and the Family as Greedy Institutions

The study of Armed Forces families involves analysis of how two societal institutions – the Armed Forces and family – intersect. Both make great demands of individuals in terms of commitments, loyalty, time, and energy. They therefore have many of the characteristics of what Lewis Coser calls "greedy" institutions.

Further, the ways in which they respond to this competition for the service member's commitment are already affecting and will continue to affect how far the Armed Forces moves in an institutional or occupational direction. Moreover, changes can occur within the traditional Armed Forces institution without the Armed Forces becoming less institutional and more occupational.

The Nature of Greedy Institutions

Both the Armed Forces and the family depend for their survival on the commitment of the members who have dual loyalties to the Armed Forces and to the family. Coser notes that individuals can meet competing demands because "modern social institutions tend to make only limited demands on the person." He illustrates this with the example of how the demands of work and family can be reconciled: "The amount of time that an individual legitimately owes to his employer is normatively and even legally established; this makes it possible for him to have time for this family or other non-occupational associations."

For institutions, and groups and organizations within them, to survive in the face of competing demands on individuals, they must develop mechanisms for motivating individual commitment and self-sacrifice is legitimated through the operation of normative values, which compel the individual to accept great demands on his time and energy. Further, the organization controls the demands: the individual does not get to choose when and how to comply. Role obligations are diffuse and place of residence is not separated from place of work. In return for his service, the individual receives esteem from the larger society and

compensation from the Armed Forces, much of it in non-cash form. Of the several types of non-monetary compensation, those that have the greatest relationship to families are job security, on-base housing, medical care, allotments by family size, subsidized on-base consumer facilities, and numerous on-base services, such as schools and recreational activities.

To accomplish its mission, the Armed Forces make various demands on service members. Although it exerts some specific normative pressures directly on family members, most pressures affecting families are exerted indirectly through claims made on the service members. For both types of pressures, the family is expected to adapt to the greediness of the Armed Forces institution and support the service member in meeting Armed Forces obligations. However, important societal trends in general and in Armed Forces family patterns in particular are making this adaptability problematic. Because of these trends, which include changes in women's roles in society (especially labor force participation rates), as well as increases in the numbers of married junior enlisted personnel, sole parents, active-duty mothers, and dual-service couples, Armed Forces families themselves are becoming greedier, increasing the potential conflict between the Armed Forces and the family.

To clarify the conflict, the ways in which the family operates as greedy institutions, especially for certain people, will be examined. The Armed Forces will be analyzed as a greedy institution; the specific demands it makes – and some effects those demands have – on service members and their families.

The Family as a Greedy Institution

Nuclear families make different demands on different members. All members are expected to be emotionally committed to the family, to display affection toward other members, to identify with the family as a unit, and to fulfill role obligations that are diffuse, relative to most other social groups. However, the family is not a greedy institution for all members; rather, if we use the concept of greed as a continuous dimension, the family is greedier for some members than for others.

At certain stages, of course the family is relatively greedy for both women and men. This is the case, for example, with new marriages, which require greater time and emotional adjustment than established relationships, and with children who are very young or who for other reasons need fairly constant supervision. As children get older, they need less constant supervision; however, parents of

adolescents often find this stage demanding emotional energy. Clearly, the family is especially greedy when it has only one parent. For instance, we can expect pressures from wives on husbands to adapt their career decisions to family needs, including wives' career considerations.

The Armed Forces as a Greedy Institution

The Armed Forces is unusual in the pattern of demands it makes on service members and their families. Although each specific organizational requirement can be found in other occupations, the Armed Forces is almost unique in the constellation of requirements. (Perhaps the only other occupation that exerts a similar set of pressures is the Foreign Service). Some demands vary in frequency and intensity among and within the services, but over the course of a Armed Forces career, a family can expect to experience all the specific demands. Characteristics of the lifestyle include risk of injury or death of the service member, geographic mobility, periodic separation of the service member from the rest of the family, and residence in foreign countries. Normative pressures are also directly exerted on family members regarding their roles in the Armed Forces community.

Armed Forces Adaptations to Armed Forces Families

The more the Armed Forces actions make service members and their families truly hear and believe the message that "the Armed Forces takes care of its own," the less will be the conflict between the two greedy institutions of the Armed Forces and the family. To the extent that the Armed Forces views the family as an outside influence with which it competes, the Armed Forces will likely move in an occupational direction. To the extent that the Armed Forces work to incorporate the family within itself and adapts to it, the result will be institutional change and preservation of the institutional nature of Armed Forces organization.

Institution building is fundamentally the task of organizational leaders at all levels. At the top of the organization, senior leadership (civilian and Armed Forces) must mediate the changes at both macro and micro levels. They must take the responsibility for articulating what is distinctive about the Armed Forces and for ensuring that the distinction is understood and legitimated outside and inside the organization. They must also shape values within the organization. Collectively, they must create a vision—a sense of organizational purpose—that is shared by all and that integrates all segments of the organization toward a common goal. Lower-level officers are also responsible for institution building. In their everyday interaction with the troops, they are the institution. The ultimate concern of

every officer should be binding subordinates to the organization and to the mission. They must exemplify the values of mission over self and of devotion to the corporate body, even at the risk of their careers. Actions say more than words, and the troops know what is real and what is lip service.

At this point, summarizing my observations on the essence of the I/O model seems appropriate.

(a) The I/O model conceptualizes the Armed Forces and society as interdependent and interactive. The Armed Forces is clearly not a closed system.

(b) The social character of the Armed Forces can be conceptualized as varying between two conceptual models – the institutional and the occupational.

(c) The social character of the Armed Forces is composed of the values and attitudes of its members and of the particular policies and structural arrangements organizing those members.

(d) Values and social definitions of Armed Forces service either as an institution or as an occupation influence the choice of policies and structural arrangements. The former shape the latter, although a recursive effect may be involved over time.

(e) The social definitions of Armed Forces service among constituencies inside and outside the Armed Forces system are significant in understanding processes of transformation in Armed Forces systems.

(f) The Armed Forces is changing through time away from the institutional model toward the occupational model; at the root of this change are changing social definitions about the meaning of Armed Forces service in the national context.

(g) Those responsible for the long-range evolution and design of the Armed Forces should grasp these transformational dynamics, consider their implications, and take action to alter emergent character of the Armed Forces. In this sense, the model has an implicit action imperative regarding policy formation and the shaping of values regarding Armed Forces service. Armed Forces and civilian leaders in the defense community must learn to manage Armed Forces culture.

The key concerns of the I/O model are the social legitimacy of the Armed Forces and Armed Forces service within society and the cohesion and operational

commitment within the Armed Forces community. Values differ in the institutional and the occupational cases. The institutional model is seen—implicitly at least—to be high in social legitimacy, high in cohesion, and high in operational commitment. The occupational model, on the other hand, postulates low values in each case. Correspondingly, the effectiveness of the Armed Forces – an ambiguous construct at best—is presumed to be high in the institutional case and low in the occupational case; the culture of the assembly line is not equivalent to the culture of the firing line. This proposition (it is a proposition rather than a fact) is central to the I/O model, and the implication is clear: we must build a culture of the firing line and make policy with this culture always in mind, working to strengthen the social legitimacy, cohesion, and operational commitment of the Armed Forces and its membership.

The most important task in defence is the one most likely to be overlooked since it lies in the realm of values and character rather than in quantities which can be represented on charts. Before anything else, we must recognize that a functioning Armed Forces requires bonds of trust, sacrifice and respect within its ranks, and similar bonds of support and respect between an army and the nation it represents.

The Strength of the Services

The Services have never been monetarily very lucrative but have nonetheless attracted the cream of the youth. This has been possible only because the glamorous and clean image of the men in uniform has attracted the youth. Despite the pluses and the minuses, the overall package deal has never failed to attract the youth. In my opinion, the main strengths that the Services have in their favour are as under:

(a) Pride and Honour

Serving in the Armed Forces gives a person a fierce sense of pride in the fact that he has joined a noble profession. He has the proud privilege to be working in a profession in which he could get the privilege of laying down his life for the country when required. It is this sense of pride and fulfilment, which enables a defence officer to stand tall and confident irrespective of whether he is on the streets or in some millionaire's plush bungalow.

(b) Command and Responsibility

A job in the Services is the only one where you are responsible not for company's annual turnover, but for the lives of the men under command. Your decision could mean the difference between life or death for your men. Whether

you are leading your men on a patrol, sailing a ship or flying an aircraft, this responsibility is immensely satisfying and at the same time sobering. This is a kind of responsibility, which perhaps no other job can offer.

(c) Esprit de Corps

The bond between comrades which develops in the face of danger gives the Services their fierce esprit de corps and loyalty to each other which perhaps is incomprehensible in normal circumstances or jobs.

(d) Adventure and Excitement

Life in the Services has long been associated with an active adventurous lifestyle. The very nature of the job is enough to get the adrenalin pumping in a young man. While our counterparts may be doing a nine to nine job in their respective air-conditioned offices, they are driving tanks, leading troops on patrols, sailing ships or submarines or flying aircraft. Services give a young man adventurous opportunities which might not be so easily accessible in civvy street.

(e) Quality of Life

The Services have always offered a good quality of life to the officers and also to their families. Well organized cantonments, sports facilities, hospitals, canteens, clubs and other facilities combine to make for a systematic, organized and protected lifestyle.

(f) The Social Fabric

Perhaps, one of the greatest strengths of defence life is the presence of a well-knit, homogeneous community of like-minded people with the highest standards of morals and social coexistence. The social fabric of the defence forces is undoubtedly one of its greatest strengths.

(g) Respect in Society

A defence officer has always been respected in society for his clean and honest image. While money no doubt can buy a lot of things in society, it probably would not be able to buy the kind of instinctive respect a defence officer evokes.

Civil-Armed Forces Relations and National Security

According to Huntington, civil-Armed Forces relations is the "principal institutional component" of Armed Forces security policy.[13] Civil-Armed Forces

relations should be such that they maximize a nation's security, without unduly sacrificing social values.

He warns that nations that cannot develop balanced civil-Armed Forces relations "squander their resources and run uncalculated risks."[14] He also emphasizes that the quality of decisions impacting on national security depends on the institutional pattern through which such decisions are made. The needs of security rather than the maintenance of societal values should determine the pattern of civil-Armed Forces relations.

The Officer Corps

Huntington makes the following key assertions about the Officer Corps and its relationship with the society and the state:

(a) "The principal focus of civil-Armed Forces relations is the relation of the Officer Corps to the state. Here the conflict between the functional and societal pressure comes to a head."

(b) "The Officer Corps is the active directing element of the Armed Forces structure and is responsible for the Armed Forces security of the society."

(c) "The modern Officer Corps is a professional body and the modern officer a professional man."

Huntington takes pains to explain the term professional. As applied to the Officer Corps, the term is not merely the opposite of amateur, but has the same sense as applied to professionals like doctors, lawyers, clerics and diplomats whose professionalism is characterized by expertise, responsibility and corporateness.

- Expertise
- Responsibility
- Corporate Character of Officership

Armed Forces Professionalism

The problems of civil-Armed Forces relations arose when an autonomous Officer Corps emerged mainly as a result of technological developments which necessitated specialization and thus Armed Forces professionalism. This fundamental change occurred in early 19th century and was spurred by the political, social and economic conditions that then prevailed in Western societies. Competition for markets and raw materials, and the requirements of the colonies, necessitated the creation by nation-state. Huntington, "created a corps of permanent

Armed Forces experts devoted to the interests of Armed Forces security." He also identifies 6 August 1808 as the date of the origin of Armed Forces professionalism. The Prussian government on that day, by a decree, set forth the basic standards of officers' selection and professionalism with uncompromising clarity: "The only title to an officer's commission shall be, in time of peace, education and professional knowledge; in time of war, distinguished valour and perception. From the entire nation, therefore, all individuals who possess these qualities are eligible for the highest Armed Forces posts. All previously existing class preference in the Armed Forces establishment is abolished and every man, without regard to his origin, has equal duties and equal rights."[15]

The Prussians developed a complete system of entry, education and advancement for the new profession of officership. It was this system which was studied and adopted by other Western nations and subsequently introduced in their colonial forces.

Civil Control

Having created an autonomous Officer Corps the need arose to curtail its power and keep it subordinated to the state's authority; hence the term civil control. Huntington cautions: "Civil control may cover a variety of sins. It is always necessary to ask which civilians are to do the controlling."[16] He defines two types of civil control: subjective civil control which maximizes civil power and objective civil control which maximizes Armed Forces professionalism. Regarding objective civil control, which should be the norm in democracies, Huntington makes three profound observations. One: the distribution of political power between Armed Forces and civil groups "is most conducive to the emergence of professional attitudes and behavior among the members of the Officer Corps."[17] Two: "objective civilian control achieves its end by militarizing the Armed Forces, making them the tools of the state. The essence is the recognition of autonomous Armed Forces professionalism."[18] And three: "Objective Armed Forces control achieves the minimizing of Armed Forces power by professionalizing the Armed Forces, by making them politically sterile and neutral."[19]

Huntington establishes the co-relation between authority and influence of groups like the Officer Corps in a state. Higher level of formal authority imparts greater unity to the group's structure and broadens the scope of its authority and makes it more powerful. The scope of authority also increases with the variety and type of values (eg. Finance, R&D, production) which the group formally

controls. Huntington also unequivocally concludes that if the Armed Services are under one commander, the authority of the Officer Corps increases vis-à-vis other government institutions.[20]

Influence, on the other hand, may stem either from attributes like personality, wealth etc as far as an individual is concerned. However, the influence of a group like the Officer Corps is governed inter-alia by in-service ties, for instance with the members of parliamentary committees and with defence-related industries. Other important factors which determine influence of the Officer Corps are: "the economic and human resources subject to its authority, the prestige and popularity of its leaders, and the positions of authority its members hold in the non-Armed Forces power sphere."[21]

Armed Forces Institutional Characteristics

As far as compensation is concerned the approach is paternalistic wherein sizable in kind and subsidized facilities are provided to Armed Forces personnel, as also deferred pay in the form of a higher pension which compensates for peculiar service conditions like curtailed career spans.

The conditions under which people in the Armed Forces institution live and work develop a bond and a sense of identity amongst them. The organization "creates the feeling of shared interest; being part of the same organization has traditionally been more salient than the fact that Armed Forces members do different jobs."[22] In an institutional Armed Forces, personnel work and live in the same "lines" in which the families of those who are married also reside. These lines are the hub of their professional and social lives-"the collective institutional home" of an Armed Forces unit with which the unit personnel identify. "The role of institutional membership in the Armed Forces community extends to spouses. They are expected to initiate and take part in panoply of social functions and volunteer activities."[23]

An institutional Armed Forces evaluates its personnel according to "whole person" criteria and the reliance on qualitative and subjective is thus substantial. "The more institutionalized a Armed Forces, the wider the span of Armed Forces justice system…" In a society characterized by institutional Armed Forces, prior Armed Forces status carries into civilian life; veterans will enjoy preference over non-veterans, especially in government employment and entitlements."[24] The increase in civilian workers in defence employment impacts adversely on institutional and Armed Forces morale. It also results in an unwelcome increase of work load of Armed Forces personnel.

Specialists' Culture

The higher the level of technology in a service, the more specialists it will have and more will be its occupational tendencies. According to Frank R. Wood, specialists "place primary importance of their specialized function, which could be accomplished as well in civilian organization, and on satisfaction associated with jobs in that speciality."[25] This characteristic restricts their social interaction within their specialty which, in this age, is most likely to also exist in the civilian market-place. Their loyalty to the organization may be transitional: "When the cost of staying in the Armed Forces is too high, perceived opportunities outside the Armed Forces determine career decisions."[26]

Countervailing Occupational Trends

In the US, there were pressures to reinvigorate institutional features to counter-occupational tendencies. The aim was "to enhance member commitment and corporate identity."[27] In the US Army, unit cohesion was strengthened. US Navy introduced Operation Pride to stress Navy tradition by "more wearing of uniforms, restoring privileges of rank and more attention to Armed Forces courtesy and ceremony." Project Warrior of US Air Force promoted "service pride, awareness of air force heritage, emphasis on leadership instead of management, and development of war fighting awareness."[28]

Court decisions in the US at about that time decreed that "Armed Forces and civilian worlds were separate and necessarily so." "Service members", it was also ruled, "could not sue their superiors for alleged violation of constitutional rights." Lower Courts were advised to "hesitate long" before tampering with the "heart of the necessarily unique structure of Armed Forces establishment."[29]

Analysis – Survey of Officers

The aim of the survey was to generate empirical data principally by random sampling (Appx A) to validate the approach to the project and to prove the hypothesis. The data generated by the Survey complemented by the comments and suggestions made by the respondents afford a comprehensive picture of the orientation and attitudes of the Officer Corps. These also identify the motivation and demotivating aspects, and the attractiveness indices of a career in the Armed Forces. To that extent, therefore, the survey validated the approach to the project.

In order to reach definite conclusions, the oft-discussed aspects of pay and status were inserted in the questionnaires in different contexts. It was found that

two-thirds serving respondents find their pay and allowances adequate but in another context, 28% state that low income causes high anxiety. Even so, 70% find reasonable compensation an attractive feature of the service. However, 56% are concerned about low retirement income. As for retired officers, 62% feel that pay and pension have improved during their service but 42% assert that income to maintain standards after retirement causes high anxiety.

Similarly, two-thirds serving respondents find their social status satisfactory; in fact, they also count it as an attractive feature of the service. Yet to about half, low social status causes high anxiety. The retired officers find high social status the third most attractive feature of service life, but 73% feel that their social status has deteriorated during their service. The views of the Officer Corps on these twin important issues are ambivalent. These issues will be examined subsequently.

Principle Findings

Most serving officers are satisfied with the values which govern career choice and retention in service i.e. monetary compensation, professional development, lifestyle and social status.

Job satisfaction and promotional avenues are unsatisfactory, but can be alleviated by in-service reform and governmental support.

Lack of married accommodation, quality education for children and truncated career are the main irritants in the quality of life indices.

Juniors hunger for better example and superior moral quality from senior officers.

The traditional non-material values of a service life are still its most attractive features.

Certain occupational (non-institutional) trends have crept into the Officer Corps which seeks out-of-the chain-of-command appelates and associations to represent its interests.

Retired officers have no regrets for having joined the Armed Forces; however, they are deeply dissatisfied with the resettlement apparatus.

Causes for loss of Motivation and Attractiveness

Poor politico-bureaucratic management of the Armed Forces whereby the latter feel that they are not allowed to attain their potential.

Continuous whittling down of the authority and status of the senior hierarchy of the Armed Forces by the Government which discredits it and makes it appear inept in the eyes of the subordinates.

An entrenched feeling in the Armed Forces that the commitment expected of them is not matched by the society's commitment to them.

Senior leadership has not been able to shape values by example; consequently negative societal values have permeated into the Officer Corps, e.g. sycophancy, individualism, careerism, and consumerism.

Unsatisfactory public and media relations by, and on behalf of, the Armed Forces.

Students' Survey

The data generated applies to a metropolis-based sample and is only indicative of trends. The sample composition, i.e. parental occupation and income are fairly representational.[30]

Analysis-Students' Survey

In choosing a career, most (60%) students will make an independent decision and one-third will be guided by parents; other influences—of friends and teachers—are insignificant.

The answers to the general Armed Forces knowledge questions indicate very poor knowledge of the Armed Forces. Most of such knowledge students have garnered from newspapers and periodicals (58%) and movies/TV serials. It will, therefore, be useful to examine the former in depth; as for the latter, it will be recalled that 85% of serving officer respondents found their portrayal unrealistic.

Non-material values of service in the Armed Forces attract students most, (such surveys can, thus, determine PR themes). Also attractive are paid initial training, in-service opportunities for further education and technical skills' acquisition.

Significantly, students find a secure career the least appealing (7%) characteristic of Armed Forces whereas serving officers in their survey had marked it second most attractive- 92 %. This, along with the fact that 33% of students would like to enlist for a short- term, as if to test the waters, and then re-enlist if they so wish, indicates that job security takes second place to job satisfaction with the present generation.

Students hold the Armed Forces in very high esteem (the survey is pre-Kargil) vis-à-vis politicians, industrialists and some other professions, as far as their record of service to the nation is concerned; 25% wish to join. Three demotivating factors–unsettled family life, difficulties in premature exit and truncated career-are shared by students' and serving officers' survey. Physical risk of serving in the Armed Forces does not much deter students. Two points need to be made here: one, different factors govern esteem for a career, and actual career choice; and two, even if all these 25% students applied for entry into the Armed Forces, only a small fraction will qualify. This survey, though somewhat constrained, makes significant contribution to this study.

Implications

In regard to the theory of I/O trends, reconceptualizing the I/O thesis as the complex interaction of social organizational change on the macro, meso, and micro levels suggests a fundamental rethinking of the focus and method used to explore these trends. Because the I/O thesis is essentially a multilevel process theory, we must focus on the process rather than on the outcome, and inquiry at a single level is not sufficient to illuminate the process. Further, scientific inquiry at any level must be appropriate for that level.[31]

The case of the air force highlights the interactive nature of this process and suggests that several key analytical variables are driving social change in either an institutional or an occupational direction. The most important macro-level variable is special status; differences between the Armed Forces and the civilian organization must be recognized and legitimated by the unique and important function of the Armed Forces in society. At the meso level, functional integration is crucial. Shared activity, function, or vision must serve to integrate and focus individual effort toward the unique purpose served by the institution. At the micro level, the critical variable is orientation of the members. Institutional members orient themselves to the corporate whole and to the mission they perform, whereas occupational members tend to identify with their civilian counterparts.

The professional identities and commitment patterns emphasized in this perspective, for example, may explain attrition rates. Because specialists respond to economic incentives and alternative opportunities, their attrition will be low (they will appear to be committed when Armed Forces pay is comparable to civilian pay or when few alternatives are available in the civilian sector, (e.g., during a recession). When pay and bonuses are not competitive or when the economy improves, the attrition of specialists will increase. Officers, on the other hand, respond to normative differences. Above a minimum standard of living, they

accept and even expect personal cost and hardship, as long as they perceive themselves as working for the collective good of society. When that goal is lost or when they are thrust into a situation in which the normative goal is self-interest or individual economic reward, their commitment decreases or they adopt the economic orientation characteristic of the specialist. Thus, an unchecked trend toward occupationalism on macro and organizational level has an unexpected cost. It forces those with an officer orientation to reconsider and adopt a specialist orientation or to leave the service because the normative difference no longer exists. At the same time, those with a specialist orientation will require increasing economic incentives or will leave the service when alternatives in the civilian sector improve. In both cases, the Armed Forces will become more occupational, attrition will be high, and the cost of Armed Forces service will increase in the cash-work nexus of the marketplace.

One option is to attempt to correct the situation by formulating policies and implementing changes that promote institutional structures, norms, and orientations.

Another method supporting this strategy to revive institutional values is the renewed emphasis on leadership rather than management relationships between superiors and subordinates. Management relationships are assumed to be less personal, less caring, and more characteristic of contractual relationships than of value-oriented relationships. Leadership is assumed to be more personal, more oriented toward shared goals and values, and more characteristic of organizations demanding loyalty and self-sacrifice for the greater good. Only when society views Armed Forces expertise as unique and important will the Armed Forces have the ability to organize and operate institutionally, that is, to be divergent from society in regard to structure and norms.

CHAPTER III
INSTITUTION BUILDING OF THE ARMED FORCES IN THE OCCUPATIONAL WORLD

We note two different and competing conceptions of the role of social science and policy, which we call the engineering and the enlightenment models.[32] From the perspective of the engineering model, the approach most congenial to sponsored research, highly trained methodologists collect quantifiable data and test deductive systems of hypotheses. This work may contribute to new theoretical formulations,

but fundamentally the engineering model is one of applied research. The main task is to collect data as rapidly as possible in order to solve specific problems. In the enlightenment model, the main objective of social science is to deepen the policy makers' understanding of social institutions by illuminating critical relationships, not to supply specific answers to particular questions. In a political democracy, the ultimate goal of social research is to enlighten the citizens in their own decision-making processes.

Both good and bad research can occur under either model. Yet, whereas the engineering model is concerned with definitive, preferably quantitative, answers to specific questions in order to make concrete recommendations, the enlightenment model directs attention to fundamental and systemic problems rather than to topical issues of the moment. The institution-versus-occupation (I/O) thesis belongs to the enlightenment type of social research. It seeks to increase sensitivity to how broad Armed Forces organizational changes affect members' attitudes and commitment, which in turn affect organizational effectiveness. The I/O thesis will not give concrete answers, but it will better inform those who come up with their own answers.

The value of the comparative approach adopted in this volume is that it allows us to peel away extraneous layers of organizational cosmetics and to reach to core of institutionalism. The research undertaken here points to three basic conditions of institutionalism in the Armed Forces. First, people will accept difficulties and hardships if those in the charge are seen to be wholly involved in the system and genuinely concerned about it. Second, there must be a clear vision and articulation of what the institution is all about and how the separate parts relate to the core. The third condition, and the one that subsumes the others, is that members of an institution are primarily value-driven, motivated by factors that contrast with the calculative workings assumed to exist in the marketplace.

Institutional leadership is leadership by deed. The leaders themselves must display devotion to the ultimate goals of the organization, even at the risk of career progress. This devotion entails emphasis of the nation over the Armed Forces, the Armed Forces over the branch, and the mission over the career. In the long run, this kind of devotion will count for more than interpersonal skills or inborn leadership traits. In plain words, if attention is diverted to satisfying individual advancement rather than to serving institutional purposes, members of the Armed Forces will begin to think, "If the boss doesn't care what we're here for, why should I?"

A second major institutional imperative is to understand and communicate how the separate parts relate to the central function. The object is not to oppose or even to slow down specialization, but to make specialists part of the whole. Enhancing generalist identification becomes especially important in the technical Armed Forces, with its pressures toward identification with civilian counterparts. Ostensibly, the continual rotation of jobs is designed to broaden an officer's experience, but often it renders his appreciation too shallow to see the system as a whole. The issue is how to structure Armed Forces professionalism so that necessarily specialized personnel are reinvigorated continuously in their institutionalism.

The third and overriding major task is to keep in mind that motivation of members in an institution rests more on values than on calculation, whereas the opposite is true in an occupation. We are not so naive as to believe that pecuniary considerations are absent or even minor in an institution, but we are aware of the findings in the research literature: what we call institutional identification fosters organizational commitment and performance exceeding those of an occupation.[33] The armed services require certain behaviour from their members that can never be coterminous with self-interest.

To accent our concept of values as the driving force for institutional members, we may contrast it with the "human resources" school of thought. The model of human resources (a fashionable term in Armed Forces management circles) considers people as quantifiable entities, akin in some way to material resources. Internalization of norms, in contrast, implies a broad definition of organizational tasks and the intensity with which these tasks are carried out. As Peters and Waterman put it in their study of organizational excellence: "The institutional leader is primarily an expert in the promotion and protection of values. Institutional survival, properly understood, is a matter of maintaining values and distinctive identity."[34] Each of these basic conditions is easy to state but difficult to achieve in practice. Nevertheless, they serve as bridges between abstract principles and practical policy.

Policy Implications

The policy implications of the I/O thesis can be understood according to the level of analysis. Accordingly, we turn to concerns in the contemporary Armed Forces, as reflected in three topical areas: (a) recruitment and retention, (b) the Armed Forces family, (c) organizational commitment and leadership. We will

present an I/O preamble to each topical area and then assess policy implications at micro, macro, and especially organizational levels.

(a) Recruitment and Retention

(i) A recruitment force, found typically in the ground forces, is relatively labor-intensive and physically demanding, and has a large proportion. Conversely, a retention force is more characteristic of air forces. Such a force is capital-intensive and skill-demanding, requires long enlistments and does not rely on draftees, and has a large proportion of members who are spouses and parents. Because retention forces contain more technical specialties with civilian counterparts, trends toward occupationalism are more likely to be found there than in recruitment forces.

(ii) The intersection of micro and macro trends has implications for policy at the organizational level. In theory, services have a uniform compensation system, but in practice service compensation tends to be differentiated by recruitment or retention. The prime incentive for retention forces, however, is the retirement system. The reduction of retirement benefits—a strong institutional feature – will aggravate retention problems, especially in the technical branches, where skills with civilian transferability are most common. In addition, by gearing monetary incentives to the market, the Armed Forces become subject to the vagaries of the economy, over which they have no control.

(iii) The distinction between recruitment and retention forces, coupled with an appreciation of the I/O thesis, suggests a grand strategy for Armed Forces personnel planning. It is time to codify the existing compensation trends that differentiate between recruitment and retention needs. In a world of compensation trade-offs, the technical services can forego recruitment advantages, and the ground forces can reshape their personnel structure to reduce the career portion, thereby cutting total retirement costs in the long run and moderating political pressures to change the retirement system. A variegated compensation policy might be as follows: retain as much as possible of the traditional retirement program. Various other trade-offs can be calculated on the basis of enlistment and reenlistment bonuses and compressed versus decompressed pay scales, but the basic compensation are vital for the technical needs of retention forces and for the citizen-soldiers of recruitment forces.

(b) The Armed Forces Family and Spouse

(i) An undisputed finding across all Western Armed Forces systems is the growing conflict between Armed Forces demands and family priorities. However, recognizing the conflict is not enough; a more refined analysis must specify how different stages of the family affect Armed Forces career development. We must be especially alert to the different effects of Armed Forces -family conflict on husbands and on wives.

(ii) At the micro level, the key concern is not to force Armed Forces members to choose between the Armed Forces and their families. Members may quickly "divorce" the Armed Forces rather than their families. At the macro level, we see no signs of reversal in the societal trends toward more women in the labor force and in the cultural trends toward women seeking opportunities independent of the husband's occupational role. In the future, wives will be even less likely than at the present to be adjunct members of the Armed Forces organization.

(iii) Males, especially officers, seem in general to put the Armed Forces first in the early stages of their career, when they are working hard to make their mark in the Armed Forces profession. The officers tend in the later years to give greater weight to family needs, such as children's education, wife's career, and emotional involvement within the family. Armed Forces spouses have settled increasingly into occupations, perhaps even careers, in the local area. In addition, a wife's support for her husband's Armed Forces career is shaped not only by her views on her own role and by her feminist values (or lack thereof), but also by her perceptions of how well (or poorly) her husband's Armed Forces career is proceeding.

(iv) The evidence is persuasive that wives' nonparticipation in the Armed Forces community has not harmed Armed Forces institutionalism in other Western countries. This point is worth emphasizing. Another, less obvious consideration, somewhat independent of women entering the labour force, is that wives of junior officers are less likely now than in the past to view wives of senior officers as desirable role models. One way to understand this tendency is to imagine how desirable being a general appears to a lieutenant, compared to how desirable being a general's wife might appear to that lieutenant's wife.

(v) The organizational implications for the family in the Armed Forces are not clear-cut, but rather than implicitly discouraging wives of career Armed Forces

personnel form seeking outside employment, a neutral or even a supportive position toward such employment may be better – especially when the children reach school age. Although this idea may appear counterintuitive from an institutional standpoint, it offers the provocative hypothesis that lessening the Armed Forces obligations of contemporary wives may increase their husbands' institutional commitment. One hallmark of an institution is that it deals with its members as whole persons, taking into consideration their lives outside the workplace.

(c) Organizational Commitment and Leadership

(i) First of all, Armed Forces leaders must be clear in their own minds as to what is distinctive about Armed Forces personnel, namely, their capacity to make war and their utility for foreign policy, which derives from the war capacity. The Armed Forces must perform actions – the intentional killing or injuring of other human beings and the mass destruction of property – that are condemned in other contexts. In concert with the top political leaders, Armed Forces leaders must enshrine the proposition that America, as the greatest free power, has the moral and political obligation to preserve its free institutions and that it must equip itself with a Armed Forces that can discharge these obligations.

(ii) After they have articulated the unique and awesome responsibilities of the Armed Forces institution, the senior Armed Forces leaders must be seen as concerned and effective in protecting members' rights and entitlements – not in the sense of aggrandizement for Armed Forces personnel, but as a way to place personnel policies in an institutional perspective. This is not to say that budgetary trade-offs in personnel policy can be avoided, but that the terms of such trade-offs must take into account professional Armed Forces judgment. At the executive level, more and more personnel policy is taken into the hands of the bureaucracy and its contract apparatus; at the legislative level, more and more personnel policy alternatives are weighed by budget and accounting offices. These two elements encroach on Armed Forces professional judgment in exactly those areas that matter most to Armed Forces members. To the degree that Armed Forces members perceive senior Armed Forces leaders as ineffective defenders of an institutional compensation system, creeping occupationalism will appear in the rank and file.

(iii) Institutional policies at the organizational level, especially but not exclusively in technical forces, must aim to increase the sense of normative integration.

In building institutionalism, the leaders and the led must be socialized continuously to understand how the individual's part supports the corporate whole. Conventionally, this socialization occurs in two basic ways: first, by starting all careers in the institutional heartland, such as basic training for the enlisted troops and commissioning programs for officers; and second, through strategies to reunify the hegemony of the whole through professional Armed Forces education, notably at the staff and war college levels. These two approaches have their limitations, however; basic training and commissioning programme are variable, have limited normative content, and take place before the centrifugal forces of specialization are operative, and professional Armed Forces education affects directly only a fraction of the total noncom or officer corps. Moreover, no real evidence exists that professional Armed Forces education programmes, as presently designed, increase holistic or institutional thinking in the career force.

(iv) The content of professional Armed Forces education must be rethought as much as the format. Professional Armed Forces education aims currently to prepare a Armed Forces person for promotion, but it should also be seen as a way of broadening a member's experience in the armed services. Professional development should be consistent with articulating a vision of the organizational whole. This point is particularly important because of the degree to which the Armed Forces departs from the most common form of institutional promotion: being promoted with one's cohort. Because few individuals will make general (and not many will make full colonel, for that matter), exposure to adjacent skills is good not only for a Armed Forces person's individual morale, but also for increasing the knowledge of how and why the officer does his or her own job.

CHAPTER IV
RECOMMENDATIONS & CONCLUSION
RECOMMENDATIONS

Political Interest in Security-Related Issues

Political parties, when in opposition, should appoint a defence spokesperson. All parties should develop a group of party men who are considered experts in national security issues.

The role of the Armed Forces should figure in the Constitution of India. This will encourage political and academic debate, and help in building national consensus on defence missions. This will also provide guidance to the Forces to build necessary capabilities.

Political direction is the fountainhead of all planning. For Armed Forces security not to "operate in a vacuum", national aims, national strategy, threats and national security strategy should be clearly enunciated as also perspective budgetary support. This only can prevent procrastination and "case-to-case" examinations of Armed Forces security issues.

There should be political realization that objective civil control while on one hand maximizes civil power, on the other it promotes autonomy and professionalism of the Armed Forces. The latest Armed Forces coup in Pakistan should not revive the dead horse, dead for the last 30 years or so, of the apprehension of an Armed Forces coup in India. The Indian Armed Forces have unerringly been apolitical and have repeatedly demonstrated their professionalism: the latter is the antithesis of Armed Forces intervention. The Armed Forces's power should be further reduced by making it share decision-making with the politician.

A Defence Information Centre should be created to provide, besides other tasks, information on Armed Forces security related issues and to arrange presentations, seminars and visits for elected representatives. Its counter (possibly in the annex of the Parliament House) should have audio, and audio-visual presentation materials, and abstracts of premier defence journals, national and foreign, in English and Hindi.

Actual Armed Forces expertise should be introduced in the upper houses at the Centre and the States. Retired Chiefs should be nominated to the Rajya Sabha and senior officers nominated to Legislative Councils.

Jointness should be encouraged politically as it would synergize capabilities and reduce Armed Forces costs.

Armed Forces ethic is conservative and therefore, is naturally attracted to rightist political ideology, which may appear "good for the defence force." Both the rightist politicians and higher Armed Forces commanders must be made wary of this affinity which paves the way to the politicization of the Armed Forces.

Defence Management

Integration of the Ministry of Defence would work only if there is mutual respect and confidence between the bureaucrats and Armed Forces officers as also a common perspective. This can be generated by their joint participation in specially tailored training programmes. Bureaucrats require knowledge of the Services' legacy, ethos, development, record of service, and a perspective of their organizational, manning, equipping, technological and logistic needs. The Armed Forces officers, on the other hand, need education in government, political-economy, national, economic and industrial planning, social development and regional and international security-related issues. Short-about 20 working days-courses are desired at two levels: the operating and decision-making. Presently, these courses could be conducted at the USI by a multi-disciplinary faculty; later, the National Defence University, if established, could take over. Joint training will encourage mutual understating and establish social contacts.

The three Services should administratively be under their Chief of Staff. The latter will afford one point advice and will discharge his operational responsibility through Theatre Commanders. The Service Chiefs with their spans made more manageable, will be able to devote more time to presently neglected housekeeping functions-a factor which has impaired the attractiveness of the Armed Forces. This one measure will also improve jointness-organisational, doctrinal and operational-and cut Armed Forces costs.

The appointment of the Defence Minister must be accorded due consideration and should carry the same weightage as the appointment of the Foreign Minister. Besides Defence, numerous national security and crisis-management issues fall in his pale. He is also the top spender of the national budget. A perceptive manager of a high bi-partisan standing, inspiring admiration and respect, is needed. His office should have a small joint Armed Forces staff for independent input and advice.

India's Officer Corps

In specialties where shortages are endemic, extra inducements may be offered; alternatively, compulsion may be used by enactment. The aspiration of specialists must be recognized: they should be given attachments with technical institutions for updating their expertise, or participating in short R & D projects. They should also get sabbatical for further studies. Defence PR should recognize their

contribution in the Service mission. Ads should not only glorify the combat leader but also focus on the combat team which includes the technician/specialist.

Finally, and most importantly, a National Manpower Commission should be set up to go into all aspects of manpower for the Armed Forces, its macro-management terms and conditions of service and the quality of life issues.

Institutional Issues

Training in ethics and moral courage need to be stressed. This will need initiating studies and preparing texts. Moral codes should be formulated to set the 'internal compass' to guide individual behaviour.

An Armed Forces pay Review Board should be formed. It should recognize their harsh and peculiar conditions and liability of service, which necessitate pay fixation to be unique and paternal. Similarly, tribunals should be set up for independent review of representations against promotions and appointments and general court-martial awards (the latter has recently been approved). The Armed Forces should become sensitive to family norms and the contemporary spouses' aspirations. A Family Support Service System should be established at each station to comprehensively provide for family needs.

In a democracy the goal of research of this nature, which focuses on a vital element of Armed Forces security – the attractiveness of the Armed Forces as a career – is to enlighten the policy makers in their own decision-making processes. To that end, this study has not offered a blueprint or a plan; it identified and discussed the main institutional aspects which impact on attractiveness of the Armed Forces and made broad recommendations.

Career vs Calling

It is often stated, quite loudly at times by the "old guard" that officership is no longer a calling, it is a career. It is a false assertion that in the 'old days' for all who joined it was a calling. It is also fallacious. Numerous examples exist of officers who initially sought a career in the Armed Forces, but were so well nurtured and activated by the Armed Forces value system that it became a calling and they became role models. This phenomenon has been most succinctly captured by General Norman Schwarzkoph:

"When I began as a plebe, 'Duty, Honour, Country' was just a motto I'd heard. By the time I left, those values had become my fixed stars. It was a tremendous liberation. The Army with its emphasis on rank and medals and

efficiency reports, is the easiest institution in the world in which to get consumed by ambition. Some officers spend all their time currying favour and worrying about the next promotion – a miserable way to live. But the Army's Motto saved me from that by instilling the ideal of service above self – to do my duty for my country even if it brought no gain or promotion at all. It gave me far more than Armed Forces career – it gave me a calling."

Status

Low status of the Officer Corps has been nursed as a grouse for so long that it has become a part of its psyche. However, posed questions on status in different contexts in the survey, the officers' responses on this aspect were found ambivalent.

While formalizing status questions the Government should heed Permutter's observation: "The feeling of the professional soldier towards his state will of course be partly determined by the esteem that his profession commands in relation to the others. Presumably, the higher his social standing, the more strongly he will identify with the state. In any case, his place vis-à-vis other professionals will certainly reflect the history of his state as well its circumstances at a given point of time." It is also evident that when status and prestige are in sharp variation to the contributions a professional class renders to the society, strains appear in the motivation of that class.

Thus historically, it is agreed; the Officer Corps would not have continued to enjoy their pre-independence status. However, the 'circumstances' of the state in the security sphere and the "contribution" the Armed Forces have been making, not only in their own perception but also in the perception of the entire society, should bring them higher prestige and status than they are presently accorded.

Asserting Armed Forces Expertise

The voice of the higher Armed Forces hierarchy in national security affairs is masked. By not letting its views on security issues known to the Government, unless asked, it has abrogated its responsibility to the society as professional experts. Generals, Admirals and Air Marshals, therefore, must assert their expertise. The same applies to matters affecting the honour, welfare and morale of troops under their command. This assertion should not be confined only to institutionalized processes. Democracy is about persuading, manipulating and lobbying. The higher Armed Forces hierarchy must therefore develop this political savvy as also deep knowledge of the ways of the Government and employ these to further the cause of national security as also of their commands.

CONCLUSION

The Armed Forces can no longer exist in isolation. Should they continue to do so, and fail to demystify themselves, they cannot expect political, media and societal empathy. Devoid of links with the society, the Armed Forces will feel alienated and neglected.

The Armed Forces should encourage organizational studies by social scientists, and develop stronger links with the universities, think tanks and experts. Whereas conscription makes the society sensitive to the Armed Forces ways, an all-volunteer force is constrained in this regard and has to make efforts to gain and maintain the mainstream. Also, it is in the interest of each Service to "keep itself in the public eye."

The organization for the welfare and resettlement of ex-servicemen has to be restructured. Also and urgently, the size of the problem has to be checked by better manpower policies as no organisation can cope if the number of ex-servicemen is allowed to grow exponently. Ex-servicemen's cause will be better served if they have representative associations.

Media project negative and incomplete picture of the Armed Forces' achievements and sacrifices. Particularly, counterinsurgency operations are reported very casually. As a social duty, the media need to educate the elites and the public on security-related affairs in a sustained manner. The Defence PR Organization should reach out to its "publics".

The attractiveness of the Armed Forces has multifaceted and interlaced dimensions. In refurbishing the image of the Armed Forces, the higher service hierarchy has to take the initiative and obtain the support of the society, the state and the media.

Despite the changes in societal values and numerous occupational alternatives available, a certain type of youth will continue to be attracted to Armed Forces life. This type is the mainstay of a voluntary force. The Armed Forces should be so managed, externally and internally, that he is not deterred from joining and, having joined, he finds the ethos, values, culture, challenge and reward which he sought in Armed Forces life.

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Appendix A

(Ref to chapter II)

Survey of Serving Officers – Inter service Comparison

	IA	IN	IAF
Career Choice & Retention	(Percentages)		
Satisfaction levels:			
Monetary compensation	64	71	62
Professional development	82	81	68
Lifestyle	85	93	89
Social status	63	72	69
Job Satisfaction			
Irritant levels:			
Unproductive paperwork	78	76	70
Non-professional duties	71	55	62
Over-supervision	60	36	60
Stagnation in rank	45	35	45
Quality of Personal/Family Life			
High adverse effects:			
Posting to non-family station	58	17	30
Non-availability of family accommodation on posting	68	81	68
Low quality accommodation	45	27	49

Inadequate leisure	25	14	9
Inadequate income	28	21	35
Problems of childrens education	51	21	46
Chief Anxieties			
Low quality of children's education	67	58	74
Low social status	55	48	51
Service Environment			
Seniors rated high in positive attributes:			
Discipline	43	45	35
Professionalism	35	43	31
Moral rectitude	22	26	18
Seniors rated high in negative attributes:			
Sycophancy	63	53	53
Self-interest	71	53	69
Attractive Features of Service Life			
Secure job	94	86	96
Regulated life	74	77	83
Camaraderie	96	89	86
High traditions of Service	92	88	78
Learning technical skills	77	85	75

Likelihood of Serving on till Pensioned off			
Likely	46	59	51
Unlikely	27	25	17
Can't say	25	16	27

Attractive Features of Service Life	
Camaraderie	93%
Secure job	92%
Decent lifestyle	90%
High traditions of service	89%
Outdoor life	87%
Learning technical skills	79%
Regulated life	76%
Reasonable monetary compensation	70%
Opportunity to do what one wishes to	70%
High social mobility	63%

Comments and Suggestions Given by Serving and Retired Officers
Symptoms/Reasons for Low Status

	Number of Comments	
	Serving	Retired
(a) Governmental Factors		
Low pay	177	21
Erosion of status in Warrant of Precedence	70	10
Dominant civil bureaucracy	49	8

Apathy of civil administration towards servicemen	40	32
	336	71
(b) Societal Factors		
Prevailing materialism/consumerism	64	14
Assumed non-productivity of Service/no war in 27 years	58	6
Yawning gap in compensation vis-à-vis corporate sector and IAS/IPS	19	3
	141	23
(c) Service Factors		
Corruption	13	1
Low quality intake	10	3
Low morale	9	0
Court cases	7	4
	39	8
Total	516	102

Suggestions Received from Respondents to Make a Career in the Armed Forces more Attractive

	Number of Suggestions		
	Serving Officers	Retired Officers	
(a) Monetary Compensation			
More pay/perks	177	21	
No income tax on pay	22	—	—
(Percentage of total suggestions)	199	23	222
(b) Additional Facilities Sought			
Soft loans to acquire a car (early in service) and a house	56	10	
Residential telephone	25	3	
Improve travel entitlements	23	—	
Assured rail reservation on short notice moves	18	—	
	122	13	135
(c) Career Development			
Improve promotion prospects	79	8	
Afford full career/lateral absorption	77	30	
Facilities for higher education	32	6	
Easier exit; golden handshake	31	3	
More-attractive package for Short Service Officers	27	5	
Reduce pensionable service	16	2	
Improve prospects for technical	4		

Officers	216	54	320
(d) Service Culture			
Senior commanders to set better example	84	11	
Eliminate non-professional/ unproductive work	60	8	
Strengthen Service values	56	11	
Enhance professionalism	50	8	
Higher Commanders to be more firm with the government in projecting Services' requirement	45	2	
Modernize/decentralize; no over-supervision	40	7	
Remove inter-branch/Service rivalries	23	2	
Transparency in promotions/Appointments	20	7	
Promotion be merit based	20	5	
Reduce flab	19	4	
Remove local restrictions on leave	13	-	
Have a code of conduct	11	3	
Introduce a subordinate evaluation	8		
	449	68	517
(e) Civil Military Relations			
Improve projection in media	106	14	
Raise status of Service in the			

Warrant of Precedence	70	10
Civil administration to be more responsive	40	32
Reduce the Army's involvement in internal security duties	33	2
Compulsory Military service for government officers/deputation of Service officers with civil department	33	13
Military retirees to enter politics/be nominated to Rajya Sabha	___	5
	282	71
Total	1533	328

(f) Summary – The respondents' concern, in descending order, purely based on the number of suggestions, are as under:

Aspect	Number of Suggestions
Service culture	517
Civil-military relations	353
Career development	320
Monetary compensation	222
Military families	204
Additional facilities	135
Military retirees	110
Total	1861

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