ROLES AND MISSIONS OF THE INDIAN AIR FORCE - 2032 AD

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The goal of combat is not always the destruction of the enemy's forces.

– Clausewitz

INTRODUCTION

The Indian Air Force (IAF) has just completed 75 years since it was formed on October 8, 1932. This is as good a time as any to discuss the probable role and missions of the IAF in the centenary year–2032.

The last 200 years or so have seen phenomenal progress in the growth of technology. The technological advances in any given 25 years span far exceeded the progress made in the previous 25 years. Of late, the gulf in the quantum of progress made in two consecutive 25-year spans has increased considerably. The pace of technology is accelerating and the rate of acceleration is increasingly rapidly. Yet we are readily able to accept and take in our stride the near momentous changes that take place. Humans continue to show great adaptability. The next 25 years will surely prove this point once again.

In order to get a feel for the probable environment in 2032, it may be instructive to compare the situation in 1982 to the situation as it obtains today. In 1982, unification of Germany had not yet occurred; the USSR had not splintered and was still a major power bloc; Kashmir was a tourist paradise; terrorism was far less prevalent and posed no grave threat. It was generally thought that the

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comfort of 'status quo' in most things would continue and the world would progressively become a better place to live in. It was fondly believed that no major changes that would seriously affect our lives were in the offing. Again, the few mobile phones that were available outside India were bulky, unreliable and expensive; in India, mobile phones were yet to be introduced; means of communication were comparatively rustic and unreliable; colour televisions in India were few and prized possessions; indeed, even the issue of a credit card was an article of faith. Bill Gates was just a name in the telephone directory and Microsoft was unknown, if it was born at all; there was nothing known as the "Internet" leave alone Internet banking or even trading; terms like information warfare, network-centric warfare and cyber warfare were not even imagined leave alone representative of strategies in the making or already formulated. Undoubtedly, much has happened in the last 25 years, politically, and, most importantly, in the technological sphere. In the military field, the manner of waging wars has undergone a sea-change. The revolution in military affairs (RMA) was emphatically demonstrated in the Gulf War of 1991. RMA is now taken for granted and, since 1991, major progress has been made in the more effective employment of air power. Some of the changes were witnessed in the conflicts in Bosnia, Kosovo, Afghanistan, Iraq and Lebanon. The utility of reach, speed of action and reaction, precision and lethality – the essential products of RMA – has been demonstrated time and time again. In the last 25 years, India was also involved in the Kargil conflict – a conflict whose nature and manner of prosecution had not been imagined earlier. The same holds true for Operation Parakaram – the 11 months standoff after the attack on our Parliament on December 13, 2001, with the armed forces fully deployed for war. The attacks on the World Trade Centre and the Pentagon on September 11, 2001, brought terrorism onto centre-stage and the growth of terrorism is now recognised, worldwide, as one of the most important problem areas facing us.

The changes in the last 25 years have indeed been very marked and few would have successfully forecast them in 1982. It is at least as difficult if not even more difficult to accurately forecast the 2032 scene. Conventional wisdom suggests that there will be continued acceleration in the pace of change and the year 2032 is likely to be very different from 2007 in almost every respect. However, human nature is likely to remain a constant and military conflicts will probably continue to occur. Also, there is fair probability that the IAF will have to play an increasing part in the prosecution of such conflicts. This paper attempts to analyse the nature of employment or the recommended manner of employment of the IAF. A good starting point of the discussion would be to define the role of the IAF. Thereafter, the nature of likely conflicts can be examined and 'conservative estimates' made on the technological capabilities likely to be available in 2032. Finally, the employment of the IAF and some attendant factors will be addressed.

ROLE OF THE IAF

It will be instructive to discuss what is meant by the term "role of the IAF." Indeed, the phrase suffers from different interpretations. The connotation of the phrase should also go well beyond the concepts of what constitutes a strategic or tactical air force.

In 1995, in a report by George K. Tanham on "IAF Trends and Prospects," sponsored by the RAND Corporation, some rather uncharitable remarks were made. For instance it was stated, "At least from the outside, it appears that the IAF did not take the initiative in pushing concepts of air power or in preparing an air plan for the defence of India." Also, the author writes that, as told to him, the roles of the IAF were air defence of India, counter-air operations, army support, transportation of supplies and paratroopers, and strategic and tactical reconnaissance.

The report was naturally not well received in India. Some scathing comments had been made by an outsider on the basis of interviews and perceptions rather than facts derived from actual knowledge and experience. Be that as it may, the fact that it was a RAND study ensured substantial readership but few converts to the writer's point of view. In the view of this author, George Tanham was incorrect in

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stating that the IAF did not try and explain the concepts in the utilisation of air power, or that there was no air plan for the defence of India. In fact, the IAF has always used every opportunity to explain its concept of the optimum utilisation of air power. Again, an updated air plan, modified as required with changes in equipment, training, enemy capability, etc was always in existence and suitably disseminated. Without it, the Service would not have had the basis for a procurement philosophy, training or operational planning. Possibly, the IAF could be faulted for not effectively articulating its doctrine but this was rectified with the issue of the "Air Force Doctrine", albeit as a "restricted" publication.

George Tanham's comments can be taken forward to elicit the strategic vision of the IAF. It has often been mooted, even by some insiders, that the IAF lacks a strategic vision. This is not quite true but it would be a fair comment to state that a strategic vision has not been officially articulated. There are good reasons for this. Unfortunately, the strategic vision cannot be static; it cannot be cast in stone. The strategic vision will alter with time. It is a dynamic and near continuous thought process that should lead to more effective long-term planning. Apart from those that spoke about a lack of strategic vision, there were also a few who insisted that the IAF was a tactical air force intended to only support our army and navy. Possibly, this was a shortsighted, less well thought out approach as even the support to our army and navy has strategic connotations. An acceptable definition of a strategic force would be a force with capabilities to perform tasks that cannot be carried out by other means, or at least not carried out as well or as cost-effectively. By this yardstick, all air forces, including the IAF, have always had strategic responsibilities. The quick reaction and other unique capabilities of air forces, enhanced by modern technology, make them the instrument of choice to defeat the enemy strategy. That must be viewed as strategic capability. The use of the term "tactical air force" is a legacy or relic of World War,II a war that ended 62 years ago. Much has happened since then.

Can a strategic vision be synonymous with the stated role of the IAF? The answer has to be in the negative as the vision must change to suit changed circumstances. This has to be a continuous process, but the role of the IAF should be a more permanent statement.

George Tanham wrote in the RAND report referred to earlier that he was told that there were five roles for the IAF, namely air defence, counter-air operations, army support, transportation of supplies and paratroopers, and strategic and tactical reconnaissance. The list of possible air force tasks is patently incomplete and highly simplistic. The suggestion that air operations can actually be divided into near water-tight compartments is also incorrect. More importantly, the so-called "roles" as Tanham refers to them, are merely terminologies to describe the different types of air operations. Air power is indivisible and the different air operations of war are interdependent and have to be integrated. They should not be viewed as mutually exclusive. Be that as it may, the role of the air force must be unitary in concept and should form the basis of long-term acquisition, training and operational planning of the IAF. Without a formally or informally defined role, planning will be on ad hoc basis. It is preferable that the role be formally stated. The essence of a long-term strategic vision is to formulate and adopt such a role.

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The essential purpose of the armed forces is to deter, to coerce, and to win the war in case deterrence or coercion fails. A joint approach is essential and a commonality of view should be established amongst the three Services as to core competencies, responsibilities and accountability of each Service. Each Service should have a defined 'role'. With well understood and defined 'roles', necessary understanding and synergy will automatically develop, The responsibility for defining, and formal adoption of, a 'role for the IAF' must rest with those that are charged with the responsibility at present. However, a possible definition could be: ***"Exploitation of the vertical dimension to help shape the employment of military power in pursuit of national goals."***

Implicit in the definition is the recognition that the IAF is only one of the contributors towards 'military power,' but it is the specialist Service to exploit the vertical dimension. Also implicit in the definition is the conviction that even though a single Service operation is a valid operation of war, it will be beneficial if it is the result of joint planning. Joint operations may not be the option of choice on some occasions. Joint operations represent a mere alternative but joint planning should be viewed as inescapable. The definition of the 'role' is also independent of capabilities or relative capabilities. In the pursuit of the 'role', the IAF will attempt to maximise the exploitation of the vertical dimension but the degree of success will be dependent on the relative capabilities and the manner in which such capabilities are used.

The role of the IAF as defined has long-term validity and its applicability extends throughout the spectrum of conflict, including limited or non-conventional wars. Also, the requirement for aerospace domination has been clearly emphasised. This is a classic concept and it will be the ground forces that will be most affected by adverse air power effectiveness. Again, it is air power and its ability to dominate the battle ground that will facilitate expansion of the battle space, when, and to the extent, it is desirable to do so. Air domination is not synonymous with air supremacy or favourable air situation. Air domination implies not only adequate freedom from interference by enemy air, but also the capability to effectively engage surface or airborne targets

The vertical dimension encompasses air, near space and space. Air, near space and space cannot be viewed as independent constituents of the vertical dimension. They represent a continuum and the entire vertical dimension should be effectively integrated in its exploitation. The exploitation applies to both defensive and offensive applications. Aerospace is a composite entity that favours unitary control. Undoubtedly, all the Services and other national agencies need to use space assets, but it is advisable that the IAF be appointed as the lead agency for planning and control of the military dimension of aerospace. In planning, necessary inputs and requirements of all the Services have to be collated and an approved plan worked out. The organisational aspects are not dealt with in this paper, but it is emphasised that, whatever be the organisation,

the IAF should take upon itself the responsibility and accountability for planning and establishment of adequate aerospace capability. This implies that the IAF should accept the responsibility to look after air, space, cyberspace, intelligence, surveillance, and reconnaissance (ISR) and associated requirements, information warfare, network-centric warfare (NCW), etc in a highly integrated manner. It is an onerous responsibility but necessary in the interest of efficiency and effectiveness of the IAF, and the build-up of the required expertise.

LIKELY NATURE OF FUTURE CONFLICTS

It will be stating the obvious that 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. This is now widely accepted. Also widely accepted is that wars with the objective of capture of territory on a long lasting basis, rather than as a bargaining chip, are unlikely. Attempts to rule another land by force are likely to be counter-productive.

Globalisation and the 'shrinking' of the globe have resulted in a significant increase in commercial competition.Commercial interests rather than ideological aspects are the major considerations that lead to the creation of bilateral, multilateral, regional or international relationships. Such relationships can be represented by concentric, intersecting and overlapping circles, with emphasis shifting from one area to another. Competition also ensures that there is no permanency in international relations. A joint approach in one area need not imply a joint approach in most areas. Similarly, nations could be competing with each other in some areas whilst being on the same side in others and concurrently to boot. In a polycentric world, with a number of centres of power, a nuanced diplomacy is needed to try and ensure that our self-interests are best served. At the same time, the high cost of military conflict is a dissuading factor. Therefore, discords that earlier could have led to military disputes may remain as mere disagreements; possible conflict areas need not go beyond the realm of competition; and adversaries could be content to remain rivals. Similarly, wars could be avoided not so much by the

deterrence provided by military power but by interdependence that exists between the possible warring parties. However, one cannot legislate to the enemy and rationality may be viewed differently by different states. Some wars could break out, particularly if there are historic and religious differences. Again, unless a country or side is economically very strong, constant attempts will be made to bring the war to an early close. The above sounds reassuring, but if a war were to break out where a failing or failed state is involved, few rational norms are likely to prevail. A highly flexible approach will be needed. A failing state or states is bad enough and eminently avoidable, but the eventuality of a failed state in combat is too dangerous to comprehend and defies contingency planning. Unarguably, the worst condition would be a failed state with nuclear weapons. We should also be conscious of the likelihood of spillover of trouble from states in our neighbourhood.

The economics of geo-politics can result in conflict. Historically, nations have often gone to war to secure natural resources or cheap labour, etc. This aspect is unlikely to change. Today, it is often said that China has adopted a "resource based foreign policy." More countries will also do so, and competition and, may be, conflict will occur. Hopefully, the competition will not escalate and peaceful attempts will succeed in fashioning a new, more acceptable order, but a short sharp military conflict could occur. Once again, the attempt on both sides would probably be to bring the conflict to a close as soon as possible and in as advantageous a manner as possible. Non-traditional security issues like global warming, water scarcity, etc will also become increasingly relevant. Hopefully, if military conflicts do occur, they will be short and with the limited objective of short-term gains only. It can be stated with some certainty that near continuous attempts to change the status quo will occur. It must be our endeavour to foresee likely occurrences and ready ourselves for the situations that may arise in order to ensure that the changes are in our favour.

A major difference between the last 25 years (1982-2007) and the 25 years period before that (1957-1982) was the impetus that was given to space issues. The Sputnik was launched in 1957 and some progress was made in that 25-year period, including a manned moon landing in 1969, but there has been a sea-

change in the utilisation of space in the last 25 years. The next 25 years are bound to be even more exciting. Starting from the 1991 Gulf War, increasing use of space has been made by the USA. Few countries have the desired space capability at present to seriously influence warfare, but the advantages that accrue with the use of space assets are so great that all countries will try to continuously upgrade their space capabilities and India is no exception. In fact, we have a fairly good space industry, and programmes in the offing indicate an accelerated approach to enhance space capability. Our reliance on space in war and in preparing for war is bound to increase. In the civilian sector as well, we are becoming increasingly dependent on space. Use of space assets touches our life to a significant extent and this will rapidly increase with time. 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 the adversary from inimical designs. At the same time, tremendous progress has been made to commercialise space. Now space transportation, basing industry in space, colonisation of the moon and beyond, etc are no longer in the realm of fantasy. As per a report by the US Space Foundation, "space economy" was worth $160 billion in 2005, double what it was at the turn of the century. Of the $160 billion space economy in 2005, 60 per cent was accounted for by commercial goods and services. Space economy is likely to grow even more rapidly in the years to come. Conflict is bound to follow commerce, and space warfare, in some form or the other, should be expected. We must be prepared for this eventuality that is bound to occur before 2032 even though the actual nature of space warfare will be determined by the then technological capabilities.

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Nuclear and weapons of mass destruction (WMD) proliferation is certainly on

the cards in spite of threatened sanctions and attempts to strengthen the non-proliferation and counter-proliferation regimes. The feeling of security that accrues with nuclear capability and the resultant confidence is too strong, and the temptation to achieve nuclear capability too difficult to resist. Attempts at excessive exploitation of lesser states will probably add to proliferation problems. However, it is extremely unlikely that nuclear weapons will be used against another nuclear power. The 'deterrent' is likely to remain in place but we can strengthen it by enhancing the credibility of our deterrent. In the realm of WMD, the essential danger lies in their use by non-state actors and the vicarious acts of adversaries. Both these possibilities are strictly not warfare between states but a terrible form of terrorism. Radiological bombs and, may be, even a nuclear explosion can be disastrous, but bio-terrorism can lead to millions of casualties. Well orchestrated use of the anthrax, botulism or even small pox virus can be contagious or can spread fast even across international borders before remedial actions can be put in place. The means of causing large scale deaths and serious damage to our planet are the weapons that readily fall into the hands of future terrorists.

Terrorism has certainly taken centre-stage and it is likely to remain a scourge throughout the next 25 years and more. It has been shown that it is an efficient form of warfare, with the gains far in excess of the effort involved. Also, counter-terrorism operations are often reactionary, with the terrorists retaining the initiative. With continuing modernisation in electronics and communications, white collar crime will also increase. In the September 14, 2007 edition of the *Hindustan Times*, it was stated that organised crime is a "Rs 80.75 lakh crore threat." The link between crime and terrorism is far from tenuous and the threat could increase unless a truly international approach is adopted. That is unlikely as it is in the nature of international relations not to worry about a problem that affects somebody else even if the problem could come home to roost in due course. Also, history records that the strong will always exploit the weak and wherever there is considerable asymmetry in capabilities and strength, asymmetric warfare will occur, either directly or by proxy. War by proxy may also be the preferred option to avoid responsibility. Asymmetric warfare is also referred to as 4th Generation Warfare in view of the sophistication of the means

to wage war. Technology will continue apace and, within the time period under consideration, possibly, 5th, 6th or even 7th Generation Warfare is well within the realm of the probable. It is difficult to guess the form that such wars will take.

A common denominator in the different types of conflicts that could occur is the need for speed and a deterrent posture. Also, our planning should permit inherent flexibility. Air power has to be the option of choice as it promises flexibility; speed of action and reaction are its inherent characteristics; its use can be very effective; and it is the instrument best suited to provide escalation control in order to contain the conflict.

SOME CONSERVATIVE ESTIMATES

There is general agreement that technological progress in the next 25 years will be astounding. In spite of the fact that by 2032, our gross national product (GNP) in purchasing power parity (PPP) terms will probably be the third highest in the world, it is extremely unlikely that we will be able to match the technological capability of the advanced countries. Also, the defence budget as a percentage of the gross domestic product (GDP) is unlikely to vary markedly. The size of the IAF will probably be similar to what it is at present, with relatively minor increments. However, capability-wise, we should be much better placed than at present as a result of absorption of the acquisitions in the pipeline. We should have better and, may be, even adequate combat and transport aircraft, helicopters, unmanned aerial vehicles (UAVs), balloons, radars, airborne warning and control system (AWACS,) air refuelling aircraft, weapons and weapon systems, and the infrastructural wherewithal needed for conduct of operations. In-house technical and operational expertise is also likely to be much better and, hopefully, the indigenisation drive would have been successful in large measure. Again, international cooperation would probably be at a considerably higher level. However, all these aspects will not come about automatically but will have to be brought about. Better capability is relative and it cannot be said with certainty that we will be better off against our adversaries than we are at present. We will have to make the best use of available resources and use imagination and initiative to make good some deficiencies in equipment. Use of air power lends itself to imaginative approaches. Again, conflicts

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involve not only military forces but are multi-disciplinary endeavours – diplomacy, politics, economic considerations, etc all have a part to play. However, it can be safely assumed that whilst there could be military interdependence with some countries, we will not be a part of any military alliance.

Our planning and conduct of operations will undergo major changes as a result of new acquisitions and support systems available. New technologies and capabilities will lead to altered utilisation of assets and, possibly, to a transformation in the manner of waging war. The rate of technological progress suggests that there could be two or more transformations in the next 25 years. We should be able to absorb the changes and use them to advantage. Our mindset should be conducive to acceptance of change. For instance, it is on the cards that with increasing speed and height of operation of combat aircraft, a much larger area is threatened and the task of air defence made far more difficult. This aspect should be viewed as only illustrative of the change in thinking that may be required; the recommended optimum utilisation of assets is beyond the pale of this paper.

Of critical importance will be the high cost of military acquisitions and the much higher replacement costs. Sheer economics will dictate that the attrition rate is minimised. This implies more effective weapon systems. A sound stand-off capability in the air or against targets on the ground will be inescapable. At the same time, electronic counter-measure (ECM) and electronic counter-counter-measure (ECCM) functions will become increasingly important, even though the equipment and manner of carrying out the functions may vary markedly. Again, with increased range of combat aircraft, a much larger area will come under threat. Combating the threat will become more complicated, and could necessitate that we base our military and civilian assets at greater distances from the border. With rapid increase in the number of civilian and commercial aircraft in the skies, the air defence task will become even more complicated. Hopefully, technology will come to the rescue.

Our dependence on space is bound to increase. The increasing relevance of space in military conflicts has been recorded and chronicled. Satellites will play an even more significant part in the creation of communication networks and to provide reconnaissance and surveillance. An Aerospace Command should be established in the next few years and a military communication satellite launched as well. However, the increasing need for bandwidth will demand use of some civilian capability in war and even then, technological measures will be needed to increase the use of the available bandwidth.

In the next 25 years, civilian space transport on a significant scale and commercialisation of space, including the possible beginning of colonisation of the moon is a fair probability. The USA has also selected a site for the initial colonisation – Shackleton Crater near the moon's South Pole. It has been opined that in Asia, a race to the moon has started. India's Chandrayan is scheduled to be launched on April 9, 2008. China launched a moon probe on October 24, 2007. Earlier, Japan launched a constellation of satellites for moon exploration on September 14, 2007. One of the Japanese satellites, weighing three tonnes, will orbit the moon at a height of 100 km for a year and two smaller satellites of 50 kg each will be in the lunar polar orbit. The increasing civilian and commercial use of space and consequent competition could degenerate into conflict in space. The possible conflict necessitates that we ensure redundancy. One measure to provide redundancy is the use of mini satellites weighing around 100 kg. Milli satellites (10 to 100 kg) and micro satellites (1 to 10 kg) are also under development. Such satellites will be less expensive to manufacture and to place in orbit. In fact, a number of small satellites could be launched by a single launcher and very economically. India should also have this capability in the next few years. The mini satellites will really come into their own with effective miniaturisation. With miniaturisation, more powerful sensors could be produced in sizes small enough to permit a number of them to be carried by a single mini satellite.

Improved data processing, coupled with adequate bandwidth availability and effective sensors will permit the synergistic application of networked capabilities. A proper NCW capability may not be available to us till towards the

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end of the 25 years period but it is an objective worth pursuing. We should aim to achieve incremental gains towards NCW without unnecessary time slippages. In the meantime, we could improve on our offensive and defensive capability to carry out info war and cyber warfare, a type of warfare whose ambit may extend into the civilian and commercial spheres as well.

Both competition and conflict require good, timely actionable intelligence. This is the single most important ingredient for success in war. Hopefully, by 2032, our capability should be much improved and effective maritime surveillance, hyper spectral imagery, and electronic 'eavesdropping' capabilities using space, aircraft and UAVs will be available to us. Eavesdropping is essential in our fight against terrorists. Again, hyper spectral imagery with automatic target recognition and change detection will help detect possible improvised explosive device (IED) locations and significantly aid counter-terrorist operations in general.

MISSIONS AND TASKS

The primary mission of the IAF must be to equip, train and prepare to fulfill the requirements of the accepted 'role'. The attendant mission is to support India's foreign policy objectives.

Unquestionably, the major military requirement is to achieve the maximum possible degree of air dominance. "Air dominance" has many attributes. Firstly,

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it implies that we should be able to provide effective air defence of our territory. Given the vastness of our area and limited resources, full air defence cover throughout our country may not be possible but we should be able to protect defined areas over stipulated time-frames. Even then, prioritisation is essential. Secondly,

air dominance is akin to the concepts of air superiority and favourable air situation where the operations of our air and surface forces are not effectively interfered with by enemy air. Similarly, our air operations should not be hampered by enemy surface assets. Thirdly, air dominance also means that we have the ability to hit air and surface targets effectively and speedily within the defined area of air dominance. Fourthly, air dominance facilitates intelligence gathering and represents the ability for timely and effective ISR over the areas of interest. ISR includes the capability to eavesdrop on communications, both voice and electronic communications.

The effectiveness of air power will be governed by the degree of air dominance that can be achieved. The greater the air dominance that one is able to create, the more effective will be the support to surface forces. The reverse is equally true, with the added disadvantage that the enemy air will be permitted greater freedom of action. These factors should be well understood and be duly considered in the joint planning for different contingencies. Air power can be a potent weapon if used well, and could be ineffective if the essentials of air operations are ignored. It also bears mention that the phrase "deterrent value of air dominance" is gaining currency. The term "coercive value of air dominance" is equally valid.

An important mission for the air force must also be attacking targets and target systems deep into enemy country in order to definitely carry the war to the enemy as well as to expand the battle space to advantage, particularly if we are the stronger air force. The enemy should feel our presence throughout their territory if possible. Expansion of the battle space will put the enemy increasingly on the defensive.

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So far, the IAF has made only limited contribution towards counter-terrorism operations. The reason for this is lack of adequate capability. Intrinsically, air power can

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use the high altitude to better see and hear (ELINT – electronic intelligence), carry men and material safely and speedily, and attack targets on the ground with precision and desired lethality. All these aspects should have a significant part to play in counter-terrorism operations provided the capabilities match the requirements. For instance, in Iraq, the IEDs were taking a heavy toll of Allied soldiers. The Allies mounted an extensive surveillance programme of ELINT and use of aircraft and UAVs to provide hyper spectral imagery that could, *inter alia*, determine areas where the ground had been recently turned over. The raw information collection was backed by good analytical tools. In a number of cases, the IEDs were destroyed before they could be activated. Technology can really produce marvels, and products of high technology can have a major influence in counter-terrorism operations. Presumably, the IAF will seek development or acquisition of suitable tools by which it can combat terrorism more effectively. Terrorism, in one form or the other, is here to stay for a long time and the IAF must arm itself with the requisite capability so that its intrinsic potential is put to good use.

In furthering our foreign policy objectives, the IAF capability to deter and coerce will be an important factor. Joint exercises with other countries also help, particularly if our prowess is appreciated. Probably more importantly, our continued participation in UN peace-keeping operations, and the support we can speedily provide to countries in their hour of need, can pay handsome dividends. Speed of action and reaction will always be important but so is the reach to which our capability can extend. Such capability has to be carefully built up. Few special requirements are involved. The majority of assets or equipment that may be needed for the tasks will be part of available IAF inventory.

Air power must inexorably give way to the concept of aerospace power. The indivisibility of aerospace power needs little emphasis; it is generally accepted and taken for granted. Ownership issues are avoidable complications and less

important. What is important is that the IAF must take upon itself the responsibility, on behalf of all three Services, of dealing with aerospace power in its entirety. This involves air, near space, space, control of all airborne objects, including UAVs, ISR, space-based communications, NCW, and the full ambit of cyber warfare. All these issues, in smaller or larger measure, impinge on the extent of air dominance that can be achieved, a capability that could well dictate the course of conflict. It is interesting that on September 18, 2007, the US Air Force (USAF) formed a provisional cyber command with the stated responsibility to oversee all aspects of offensive or defensive cyber warfare. Within a year, a full-fledged cyber command will be established as part of the USAF. Its task has been spelt out as 'will train and equip forces to conduct sustained global operations in and through cyber space, fully integrated with air and space operations." In a discussion of aerospace operations, Dr Lani Kass, special assistant to the USAF chief of staff and an expert on cyber space stated, "If we don't dominate cyber space, we won't be able to dominate air, land or sea domains." She added, "Cyber space doesn't mean just computers. It covers everything from satellite communications to gamma rays to microwave technologies." She also highlighted the need for cross-domain dominance involving air space and cyber space, and emphasised that "if you can't control these domains, the size of the military force employed will be irrelevant." It will be sensible on the part of the IAF to follow the USAF lead from the beginning itself although we could probably wait for the formation of a command.

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Our nuclear doctrine calls for a triad. For many years, aircraft will be the most important leg of the triad, but will always retain significance even when the other two legs are fully operational and effective. A nuclear strike is an important mission of the IAF that demands more than loading a bomb and delivering it on target. Continuous work is required to hone capabilities; and modify or alter plans, methods, and systems with change in technological, strategic or politico-diplomatic circumstances.

It is often mooted that major wars are unlikely to occur. Be that as it may, we have to be prepared for them. What is far more likely is that there will be

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continuous multi-disciplinary conflict carried out by multi-disciplinary agencies of which the military is but one part. In such combat, speed and escalation control will be important factors. Aerospace power lends itself to such requirements. However, a classic military confrontation of adversaries may not occur. 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. As a result, the VUCA factor – volatility, uncertainty, complexity and ambiguity – will prevail. We will have to manage uncertainty. Traditional forms of combat could also give way to non- traditional combat – a product of the information age. The inherent flexibility of air power would be put to good use. Again, where the results of any prolonged military conflict can have far-reaching adverse effects for both sides, it is important that escalation be controlled. One method of doing so is what is termed as "perception warfare." It is a concept that suggests that we have to create conditions, by suitable actions and occurrences, where both sides can claim victory and there is no loss of face. It is a form of warfare where graded and graduated actions or responses will be an inescapable part in our prosecution of such a war. It is air power that can best ensure controlled responses as there is substantial distance between the competing forces and the available options are much greater. Perception warfare should become an important mission of the IAF. More study and preparation for the conduct of such warfare is needed. It should also be recognised that perception warfare should be a joint, multi-dimensional endeavour.

The discussion on possible missions for the air force has shied away from the preparation of a complete list that would remain applicable for the next 25 years. Much is bound to alter but the essential nature of air power capability and its use is unlikely to change. This actual utilisation of air power is effected by air power tasks. The well accepted tasks are counter-air operations, air defence, close air

support, reconnaissance, interdiction, transportation of men and material, casualty evacuation and a number of off-shoots of these basic tasks. It is preferable that 'tasks' are not confused with 'missions' and 'missions' are not confused with 'role'. A better understanding of air power will result.

CONCLUSION

The nature of conflict and the military dimension of conflict have changed in the recent past and the rate of change will probably accelerate. However, a definite consistency in the utilisation of air power will remain although technological progress will make air power more efficient and effective. Air dominance will remain the essential mission. As we become more proficient in space technology, aerospace domination will become the major mission. It is fitting that the IAF accepts the responsibility for all aspects of aerospace power including, *inter alia*, ISR, NCW and cyber warfare. The IAF will also have to learn to operate under conditions of major uncertainties. The same will apply to the other Services but, given its basic characteristics, the IAF should be better placed to deal with uncertainties.

"Perception Warfare" will, in time, find greater acceptance as a worthwhile concept. Terms like victory and success, indeed victory and defeat, suffer from major ambiguities and defy cogent explanations. The results are also transient. In this milieu, perception warfare, where everyone believes that the war or conflict ended to his advantage, promises a longer peace. The concept requires further study and may have to go through many iterations and modifications, but any means that would reduce the chances of extended military conflict must be worthwhile. One definite statement that can be made is that the IAF will have a major part to play in the prosecution of perception warfare. Preparation for perception warfare should be accepted as a mission for the IAF.