
CENTRE FOR ADVANCED STRATEGIC STUDIES



AIR MARSHAL YV MALSE MEMORIAL LECTURE : 2007

BY

**AIR CHIEF MARSHAL FH MAJOR, PVSM, AVSM, SC, VSM, ADC
CHIEF OF THE AIR STAFF**

**AEROSPACE ~~FOR ADVANCED STRATEGIC STUDIES~~
POWER IN A CHANGING
NATIONAL SECURITY ENVIRONMENT**

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CENTRE FOR ADVANCED STRATEGIC STUDIES

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CONTENTS

Item		Page
Welcome by	: Air Marshal S. Kulkarni, PVSM, VM	2
Tribute to Late Air Marshal Y V Malse	: Air Cmde Jasjit Singh, AVSM, VrC, VM Director, Centre for Air Power Studies, Delhi	3
Introduction of Chief Guest by	: Air Marshal S. Kulkarni, PVSM, VM	8
Air Marshal Y.V. Malse Memorial Lecture	: by Air Chief Marshal F H Major, PVSM, AVSM, SC, VSM, ADC Chief of the Air Staff	10
Closing Remarks by the Chairman	: Admiral J G Nadkarni, PVSM, AVSM, NM, VSM	22

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**WELCOME BY
AIR MARSHAL S. KULKARNI**

Air Marshal S. Kulkarni welcomed everyone present for the Air Marshal YV Malse Memorial Lecture : 2007. He said that late Air Marshal Malse was the founder of the Centre for Advanced Strategic Studies. With his perseverance and dynamism he succeeded in getting together industrial stalwarts, late Shri Shantanurao Kirloskar and late Shri Navalmal Firodia, late Shri PVR Rao former Secretary of Defence, Admiral (Retd) JG Nadkarni, former Chief of the Naval Staff, late Shri RD Sathe, IFS, former Foreign Secretary, Shri Sharad Marathe, IAS, former Industries Secretary, Government of India, late Professor VG Bhide, former Vice Chancellor, University of Pune and formed the National Security Forum. He saw the relevance of the Forum and the need to establish a "Think Tank" away from Delhi, deliberating and discussing National Security issues. Within a short time, through his tireless efforts the National Security Forum was transformed into the Centre for Advanced Strategic Studies in October, 1992. He persuaded late Shri PVR Rao, former Defence Secretary to take over as the President and Admiral JG Nadkarni, former Chief of the Naval Staff to take over as the Director of the Centre.

Air Marshal Kulkarni further said that it is befitting that Air Chief Marshal FH Major, PVSM, AVSM, SC, VM, ADC, Chief of the Air Staff has kindly consented to deliver the First Air Marshal YV Malse Memorial Lecture. He once again welcomed Mrs. Prabha Malse, the Malse family members, Lt Gen Aditya Singh, PVSM, AVSM**, ADC, G.O.C.-in-C., Southern Command, Air Marshal KD Singh, AVSM, A.O.C.-in-C., SWAC, Air Chief Marshal (Retd) H. Moolgavkar, PVSM, MVC, former Chief of the Air Staff and the large audience present for this occasion. He then requested Air Cmde (Retd) Jasjit Singh, to pay his tribute to late Air Marshal YV Malse.

**TRIBUTE TO LATE AIR MARSHAL YV MALSE BY
AIR CMDE JASJIT SINGH**

“When I was asked to come and speak on this momentous occasion to pay tribute to a great man, a great aviator, a great Air Marshal, friend to lot of youngsters like me, guide, philosopher in many ways where one could say silly things, and he would absorb it in the breadth of his vision, the depth of his understanding and the extent of his knowledge, and above all his humaneness and kindness, I wasn't sure what am I going to say. I am still not sure what I am going to. So perhaps I will just speak whatever comes to my mind, hopefully from the heart more than the head. He was far too senior to people like me. I never had the opportunity of directly serving under the Air Marshal at any time, but I came into close contact with him even when I was in service, and much more in many ways when I was exploring the history of Indian Air Force, and then after he retired.

There is a period of Indian Air Force history, perhaps the whole of history, which has not attracted sufficient attention even amongst the Air Force and air warriors. But what was very significant was, which at least a part of it every one remembers, that No. 1 Squadron moved to Burma on the 2nd February 1942 all the way from NWFP. One reason perhaps is that the Second World War is not remembered by many of us in many many ways because this was supposed to have been the war of the British and their allies. But in the east, on the Burma front, more than anywhere else we were defending India. And there was a unique event that took place, the next day, on the 3rd of February 1942, when the then Squadron Commander “Jumbo” KK Majumdar took off in an aeroplane called Lysander which had been locally fitted with two bombs under the wings making it even slower than the slow aircraft it normally was to cruise at a little over 100 mph. It was to return the compliments to the Japanese Air Force across the border in Thailand, to bomb their base, because they happened to have bombed the Tongou air base in Northern Burma the day No. 1 Squadron landed there. The next day, after that the whole squadron took off and the first six led, by Sqn Ldr “Jumbo” Majumdar to bomb the Japanese at their base across the border. In the history of aviation,

in the history of Indian Air Force, 3rd February 1942 stands out as the important date when the young No. 1 Squadron, the young pilots, the young Squadron Commander bombed the Japanese air base with all its 12 Lysander aircraft causing extensive damage.. The next day once again "Jumbo" led the whole squadron along with Young Flying Officer Malse flew with the first wave of six.

The next day No.28 Royal Air Force Squadron, also joined the bombing mission because they were keen to be led by "Jumbo" Majumdar across the international border to bomb, however small the bombs, the Japanese air base. Much later terminology about "counter" air operations was coined. Much later the issues came up about how we should achieve air superiority. But the beginning was made by the pioneers of Indian Air Force. And on the that particular mission No. 1 Squadron which was flying Lysanders at that point of time young Flying Officer YV Malse was an important member of the first formation that bombed the Japanese. He later served again in the Burma Campaign with No. 2 Squadron. It is a long list of pioneering operations which not many perhaps may remember. Later Air Marshal Malse commanded No. 12 Squadron. Later generations remember him as a transport pilot; but few can recall that his pioneering days were spent in the fighter force in wars. That actually tells you once again that there was no real difference between the fighting people who fought for the country and in the air force whether they were flying fighter aircraft or transport aircraft, or any other thing that could possibly fly. The Air Marshal was one of those pioneers who shaped the IAF. That is what I see from history. And that dedication, that effort, that whole thing just went on from one step to the other to the other and so on and so forth.

When Malse took over as a Deputy Chief I was at the lowly level of a Squadron Leader in the 'P' staff in Air HQ in those days. I must admit my nervousness when he sent word that I should go and see him. By all logic I had finished my extended tenure in the Air Headquarters. I was hoping to get back to a Squadron and fighter flying. But he said, "Would you like to be my staff officer?" I was shaken because that would have meant starting another tenure in Air Headquarters and I at that stage I was out of flying for some years and

I said "Excuse me, Sir, but I need to go back to a fighter squadron". He said he would send me for flying frequently. But I said, "No, Sir, I need to be a flight commander somewhere to be able to learn what it is to be able to stand up and be counted". He said "You know I want to make it very clear that I do not want you as my staff officer in the normal sense. I want a professional man here dealing with operational issues". It was a great honour for a Squadron Leader to be told by the Deputy Chief of the Indian Air Force. I still hummed and hawed. I said, "Sir, I would still like to get back to flying". He said, "Ok, think it over and let me know tomorrow" Next day I repeated my views. The Deputy Chief in those days dealt with operations and it was a great opportunity to learn professionally a lot at that level. But I wanted to get back to aeroplanes and fly in a squadron. So I said, "Sir, if you don't mind". He said, "Ok. Fine".

Of course it is a different matter that I was held back. I was posted on paper to a Squadron but held back for another year and a half! I might as well have done the job of a staff officer to the Deputy Chief at that time, but I missed it. But, the great man, I do not think he held it against me. The second time I saw him was within a few weeks of that. Denzil Keelor was in the Ops branch at Air HQ as a Squadron Leader and I was in the Personnel branch at that time. So after the 1971 War we used to chit chat a lot. We got down to looking at some of the air engagements of 1971 war. Both of us put our thoughts down on paper. I do not remember the details now. But I know that the Air Marshal remembered it till may be two years ago, when he said "You know I remember that paper, I remember the details on that paper. I remember the drawings that were made of air engagements that took place, what lessons should we draw". The point I am trying to say is not that Denzil and I put across the paper which went all the way to the Deputy Chief, and immediately to the Chief of the Air Staff and then there were a lot of vibrations. Both the pluses and minuses were discussed and the decision then was taken to say, all right post both these guys to be on the staff of TACDE. Then it was realized Denzil was medically unfit so he could not go so back. Back to me to say go on, you go there and I went up to then Deputy Chief, Air Marshal Malse. I said "Sir I have only 60 hours on the MIG 21. I have not flown the Sukhoi". He said "But this is what you did; Go and teach". The reality

is if today the Indian Air Force pilots are able to stand up or fly at par or better than some of the leading Air Force of the world, I would put this that particular date, following what TACDE did during 1971, but in terms of giving it that push for development of combat tactics and teaching them came directly from the then Deputy Chief, Air Marshal Malse. I think that perhaps this is the greatest tribute that anybody, any air force can pay to one man whose tenure as a Deputy Chief, with the full support of Chief of Air Staff, triggered off IAF's combat capability to new heights.

Times kept passing and then I was fortunate, I should say very very fortunate, to get to know the Air marshal a lot more closely. As Kulkarni said he has been the moving spirit of the Centre for Advanced Strategic Studies. We used to talk a lot both on the telephone or when I used to travel a lot more than what I do now or what I can afford to do. We did as much as we could together because "think-tanks" are critical to a nation that not only aspire but is a great power because somebody has to sit down and do these things. I think this was one of the greatest contribution of his in his later years along with many like minded people, like Admiral Nadkarni here, not to talk of Kulkarni and others that are here actually under the auspices of this Centre to be able to say these things and remember the Air Marshal in every possible way.

I think Air Marshal Malse's thinking was well ahead of time because one of the things that he always used to say after he retired and also when he was in service was about self-reliance. He had a great desire to see the Indian defense aerospace industry grow and for private sector to actually take a major part in this. This is not to say that the public sector is not doing its job or private sector did not need any support, but essentially to say that the future lies in this and today when all eyes and in fact my own time are focused on this issue of private-public partnerships, private industries role in aerospace industry and everything else, constantly I am reminded of Air Marshal Malse's vision on these things 15-20 years ago. That is how I would like to remember him from that perspective, looking ahead constantly to what is good for the country, what is good for the Air Force from a distance but yet and still extremely devoted, dedicated to the larger purpose and specific areas and issues.

Once he rang me up to say "when are you coming to Pune?". I said, "Sir whenever you say". I came down here and asked anything in particular? He said "yes" tomorrow morning at 10 O'clock we are going to see Mr. Kirloskar. He took me in his car and we went down to Mr. Kirloskar's house. Atul Kirloskar and we sat for two hours and discussed the future of our defence industry? The Air Marshal told me you are just sitting in Delhi why don't you speak to people about what needs to be done? So I listened and I went back to Delhi I asked Secretary Defence Production next day, can I come and see you. And so I went across talked with him why don't we do XYZ: this was what I was told. What I am trying to get across is not what got done in time but the vision, the dedication and the perseverance of the Air Marshal. If I was not able to do what he thought I should have done he would tell me about it but never in a way which he felt could I somehow feel disheartened. One wanted to go back to him constantly. When he came to Delhi it was always a two, three hours, session. I learnt a great deal. Today if I have achieved something there are many people who I owe it to, and one of them is Air Marshal YV Malse. I was fortunate enough to know him. It will remain my regret that I should have known him more and why didn't I spend more time with him. But, then life is like that. That is all I can say. May God bless the family and his soul. Thank you

INTRODUCTION OF CHIEF GUEST BY AIR MARSHAL S. KULKARNI

We are very happy indeed that the Chief of the Air Staff, Air Chief Marshal FH Major, PVSM, AVSM, SC, VM, ADC agreed to deliver the First Air Marshal YV Malse Memorial Lecture : 2007 inspite of his very busy pressing commitments. He was born on 29 May, 1947 in Secunderabad. He was commissioned in the Indian Air Force on 31 Dec.1967. He is a graduate of the National Defence College and Army War College.

The Air Chief Marshal has flown over 7000 hours on the Sentinel, T-6G, Mi-4, Mi-8 and Mi-17 helicopters. As a Wing Commander, he commanded the IAF's first Mi-17 Squadron, which operated at the Siachen Glacier the World's highest battlefield. As a Group Captain, he commanded another Mi-17

Squadron, leading it into battle during the operations of the Indian Peace Keeping Force in Sri Lanka. For his leadership and courage during this tenure, he was awarded the Vayu Sena Medal (Gallantry). Later, as Station Commander of Air Force Station Sarsawa he led the daring rescue of eleven passengers from a stranded cable car in the middle of a valley at a resort in Himachal Pradesh. For this act of gallantry, he was awarded the 'Shaurya Chakra'.

He has held a number of other important staff and field appointments Joint Director (Helicopter Operations) and Director Operations (Transport & Helicopter). In 1999, he took over as the Air Officer Commanding Leh (Ladakh), in the aftermath of the Kargil conflict. For his leadership, successful accomplishment of tasks and distinguished service of a very high order, he was awarded the 'Ati Vishist Seva Medal' in Jan.2002. He was promoted to the rank of Air Vice Marshal in Feb.2002 and appointed as Assistant Chief of the Air Staff (Personnel Airmen & Civilians) at Air Headquarters. On promotion to the rank of Air Marshal in Jan.04 he moved to HQ Integrated Defence Staff as the Deputy Chief of Integrated Defence Staff (Operations) and directed the relief, rescue and rehabilitation operations of the Indian Armed Forces, in India and abroad, in the aftermath of the Tsunami. On 05 Sep.05, he was appointed as the Air

Officer Commanding-in-Chief, Eastern Air Command. That tenure saw the successful conduct of three major international air exercises with the United States Air Force, Republic of Singapore Air Force and the French Air Force. He was awarded the 'Param Vishisht Seva Medal' by the President of India on 26 Jan.2006. He took over as the Chief of the Air Staff on 31 Mar.07.

He will speak on the subject of "Aerospace Power in a Changing National Security Environment".

AIR MARSHAL YV MALSE MEMORIAL LECTURE
BY
AIR CHIEF MARSHAL FH MAJOR, PVSM, AVSM, SC, VSM,
ADC
CHIEF OF THE AIR STAFF
AEROSPACE POWER IN A CHANGING NATIONAL
SECURITY ENVIRONMENT

Air Chief Marshal Moolgavkar, Air Marshal Kulkarni, Director, CASS ; Air Cmde Jasjit Singh ; distinguished guests, ladies and gentlemen. What a pleasure and an honour it is to be among you all this evening and to be invited to address such as August gathering. In fact the presence of so many 'old gurus' here, makes me wonder what I can say that you don't already know.

I must also acknowledge our gratitude to the founder of CASS and one of the IAF's illustrious former Vice Chiefs (72-73) Air Marshal Yeshwant Vinayak Malse. I would like to mention an incident that occurred last year, when the then President of India arrived at Eastern Air Command, on a visit to Shillong. The day before he arrived, I was asked to send him a brief history of the of the famous 'Malse Dam' near HQ EAC, as well as a few photographs. I wondered why ; when I received him on arrival he took me aside and said that he had stayed at the Malse Cottage, near the lake, a couple of times and that he had been impressed by the concept of the lake and dam, as well as by the vision of the man who conceived it. President Kalam was going to make Powerpoint presentations to the legislators in Shillong and in other North-Eastern states and he had included in it, photographs of the Malse Dam. He planned to use them as an example of ingenuity and self-help how it catered to the water supply of the Air Command with a population of 7,000. It could be emulated in their constituencies and would help them to be self-sufficient in water resources. While I do not know of the impact the President's presentation may have had, but it is appropriate to mention that this

dam an engineering marvel was conceived by the late Air Marshal Malse. Malse is highly regarded across the North-Eastern state for his vision and for his actions.

Ladies and Gentlemen, I have chosen to speak on "Aerospace Power in a changing National Security Environment" this evening.

'Think-Tanks' and research institutions are so essential to help guide the growth of a nation's organizations, each of which is too pre-occupied in their daily duties. It always helps to get views from persons who are not part of the setup, or those that can provide a fresh perspective, based upon their experiences in other disciplines.

I can also see in the audience some of the boys from Lohegaon and I take the opportunity to commend them on their superb display of professionalism in the UK, earlier this month, both in Exercise 'Indradhanush' and at the RIAT, for which they won a prize. Very well done indeed. Ladies and gentlemen, in its Platinum Jubilee year the IAF has truly established its credentials world-wide and is admired and respected for its competence and professionalism. An IAF calling-card today, opens crew-room doors to a warm welcome. The credit for this goes to the vision and guidance of our past leadership and the toil of air warriors past and present.

The Changing Geo-Political And Security Environment

Global

In the past, it was our circumstances and the non-aligned path we adopted, as well as poverty that kept us practically insular. In recent years, there has been a dramatic increase in international cooperation and contact. The current increasing interaction is a measure of India's growing interests and the broadening and deepening of its international relations. It is also an indication of our relevance in the scheme of things, or of others' interest in us for their own reasons. Indeed, insularity is not an option any longer and has been discarded, in practice, by even the most notoriously isolationist nations. The IAF's current outreach is a consequence and reflection of that reality.

It is of utmost importance that we keep pace with and better still, shape these relationships in ways that suit us. It is now almost universally accepted that economic growth enables growth in most other spheres of national endeavour. Indeed, that is India's 'strategic objective' and military might is important, but only because it must enhance our national objectives.

The greater interdependencies in today's world have had a significant impact on the autonomy of nations and has redefined sovereignty for all, at least for the less powerful states. The concept of 'neighbourhood' is now more inclusive, bringing with it more opportunities, as also more concerns and external influences. These influences may not always be helpful, but they cannot be wished away. It is therefore important to be able to take advantage of opportunities and indeed create opportunities. This is possible only in a country with an establishment made pro-active through institutionalized decision-making and decision-support systems, clear aims and an enlightened leadership. As a consequence, there are a host of vital interests that lie way beyond the homeland and determine what we refer to as our 'strategic boundaries'. These remote interests must be protected and that is a largely military function. Rivalries among nations are now not merely for power but for interests. 'Balance of Interests' is a phrase that is often used in place of 'Balance of Power'.

The World is not a steady place ; there are constant changes and upheavals, as are starkly evident in the changing power equations. The uni-polar order is giving way, new power centers are emerging, necessitating realignments and adjustments. New friends and opportunities, new adversaries and altered threat perceptions are the order of the day. If change is the only constant and it favours those who can anticipate well and act in time there is a lesson in it for India.

Asia

In the evolving geo-strategic environment of the World today, the center of power-play is shifting to Asia. It is where the current action is ; spurred by booming economies, there consequently 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. Perhaps all of that is an indicator of the rapid progress being made.

The Middle-East is in turmoil with seemingly insurmountable problems in Iraq and Iran. A number of other oil-rich nations are politically unstable. In our immediate neighbourhood, Pakistan under military rule is afflicted with sectarian violence and now also faces the very real and demonstrated specter of fundamentalist violence. Afghanistan is nowhere near settled. Nepal is not out of the woods, with the Maoists having more clout than is good. Myanmar continues to be under military rule. Bangladesh has a military-backed temporary government, elections are distant. The age-old ethnic conflict in Sri Lanka continues unabated.

It is also a region of nuclear proliferation and the cradle and playground of terrorism. Consider the Indian Ocean Region, every state that has nuclear weapons has abiding interest and presence in this region. 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.

India

Within this tumultuous new Asia, India is situated in perhaps the most turbulent part of the region. South-Asia mirrors all the concerns, of the Continent. India's strategic frontiers are expanding, its regional role is increasing and with it there is a spreading-thin of our resources to manage it all. Perhaps encouraged by powers such as the US, we are aspiring for a greater regional / international role. But we need more national power to back it and the gumption, flexibility and speed of decision-making to make that a reality. Our old concerns and issues with Pakistan and China have not diminished and both of whom are more powerful today the latter significantly so. There is considerable

increase in Chinese power and influence in the countries surrounding us. This is a matter of serious concern. In addition, the region is also threatened by non-state actors. The problem of terrorism is serious. We also face internal security challenges. India needs steady and concerted initiatives and progress on all fronts to surmount these challenges.

India has all the resources and endowments of a major world power. We have a strategic location in an important part of the world and are progressing rapidly. Our strategic footprint is growing, as the 'area of interest' expands ; and there are regional responsibilities and roles. We therefore, have little choice but to follow the globally recognized growth path and indeed are doing that. Fortunately for us, we also have considerable in-house talent and infrastructure.

Threats Old And New

We have long-standing disputes with Pakistan and China. In addition, the region is also threatened by non-state actors. The problem of terrorism is serious. We have in this milieu, a resurgent India, marching on the road to economic prosperity.

The spectrum of threats is also much wider, with a significant increase in the lower-end frictions, asymmetric warfare and Jihadist activities. The whole spectrum continues to acquire greater technological sophistication.

What are the new threats ? In the context of the new economic factors, our growth depends on sources and resources that lie distant from the homeland and they also become our vital national interests. Naturally, there always is a competition for resources and that in turn generates newer threats. Thus, we have a number of newer security considerations, those of trade security and energy security. The bulk of our energy requirements are met through imports, energy security becomes a critical issue, at least until we are able to action our previous President Dr. Kalam's advice and achieve 'energy independence' not merely 'energy security'.

The redrawn strategic boundaries of resurgent India therefore, extend from the Persian Gulf to the Straits of Malacca and from the Central Asian Republics to the Indian Ocean. The enlarged strategic dimensions necessitate not only a radical change in our strategic thinking but also accentuates the role of Aerospace Power in the new security arena.

Changing Nature of Warfare

A few words now on the changed nature of warfare. In the old days, op plans were real-estate oriented, with the land battle as the primary campaign, supported by the air and maritime forces. Well, even if real estate was not the main objective, enemy centers of gravity were difficult to destabilize, for to reach them one had to wade through a lot of defences in a serial fashion. Though airpower did change some of that, it has really begun to make a difference only in recent years, through modern technology. The objectives, patterns and therefore even strategies were fairly predictable. The next war may not conform to the familiar patterns of the past and we may not be able to predict with any degree of certainty as to what the new format would be like.

Just as each of the past Indo-Pak wars have been fought on different scales, levels and for varying objectives, any future war with Pak may also be fought at different levels. It may be confined to J&K ; or fought along the LOC; be a small-scale conflict as in Kargil ; or even encompass the entire international border. It may be conventional or nuclear. Each level of war will be different from the others and it would be difficult to predict the nature and scope of any future conflict. Wars will invariably be influenced by international equations. We will have to be prepared to fight internal wars against jihadis and terrorists. The spectrum of conflict is wide, and the demands on the military in a future war will be far more challenging, requiring responses that are swift and varied.

Wars have always been multi-dimensional and are increasingly so today. Future wars will require much higher levels of synergy between military power and civil authority. A new role for the military will be

'military diplomacy'. There will be a need for increased military exchanges and interactions between friendly nations. Organizational changes would be necessary to facilitate both civilian and military establishments to jointly take on both the internal and external security challenges. Moreover, the battle-spaces are now transparent to the public and legalities cannot be ignored.

Aerospace Power

Role of Aerospace Power

Going back a little into history, air power played a significant role in World War I and matured by World War II. Thereafter, wars fought in Korea, Vietnam, the Middle East and Indian subcontinent highlighted the growing importance of Air Power and its impact on the outcome. With the capability of operating in an expanded envelope, the term 'Air Power' was replaced by the more appropriate expression 'Aerospace Power' with 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.

And the reason is that there has always been a need for the transportability of national power. From the expeditionary armies of Hanibal and Alexander, merchant ships and 'men 'o' war', to the expeditionary forces of today. These were all examples of power projection and had diplomatic, economic, political or military overtones and objectives. Aerospace power is an ideal means to impart this 'mobility' to national power to be able to project it, or protect and assist anywhere in the world and most importantly at short notice.

The Indian Air Force

The IAF was established in 1932 to support the British Army, which was fighting to subdue the Afghans. Over the years, the IAF retained the mindset that its primary task was to support the land

battle. During the Second World War the British imperial authority considered it unwise to allow the RIAF to develop a strategic capability. This is ample proof of the significance of strategic air power. That mindset continued in the post-independence era and the IAF remained a tactical air force. Now that India is emerging as a global economic power, there is an imperative need to change this historical perception and shift to strategic thought.

Considering the expanding strategic boundaries, aerospace power can no longer remain tactical and by definition, it is not. Of course, the criteria for a force to be strategic or tactical is the end result. We now have the capability by way of hardware and we need to sustain the transition from the tactical to the strategic and be able to effectively influence events within our strategic boundaries. I am happy to note that the IAF in its 75th year has effectively demonstrated its strategic capabilities. We need to look beyond our boundaries, beyond J&K and China. There is no denying the fact that problems in J&K will continue. Nevertheless we must also focus on the newly emerging security concerns, as well as the internal security challenges and the changing nature of warfare.

Enhanced Capabilities, Applications and Aerospace Power Strategies for India

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. As a result, aerospace power is astonishingly reliable, effective, clean and responsive. It enables effects-based operations, makes simpler parallel operations and can create strategic effects. It offers a solution in mostly any situation in peace, or in the many shades of conflict. Aerospace power has become an 'instrument of choice'. I am aware that not all air forces have such capabilities, but the IAF is among the leading air forces of the World and can, with the right infusion of technology and training, achieve such results.

Applications

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 strength. Modern aerospace capabilities have as much, or even greater impact than what maritime power did for colonizing nations in the past. It is an important index of national power.

Unlike maritime power, whose applicability is determined by a country's geographic location ; and the land forces, whose shape and size is determined by relations with neighbours, size of country and internal security compulsions ; aerospace power has a more universal applicability. Even the Army and Navy need airpower.

Aerospace Power Strategies for India

Clearly, given our situation, concerns and aspirations, a strong and comprehensive aerospace capability is inescapable. Aerospace power has classic roles, which have been described variously. If I may use my own classification, the roles could be referred to as Deterrence, Punishment, Protection, Projection and Peace-time roles (D4P). It will be readily apparent, that India needs it air force 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'. Our deterrence includes the nuclear dimension, at least until the triad is complete. Also, the longer our effective reach, the more credible will our deterrence be.

The IAF's primary traditional role is 'protection' 'Protection' has now expanded beyond the homeland and island territories, to the SLOCs, energy and trade interests, in a steadily increasing circle of influence. Essential for this role are of course, long-range EW sensors, AWACS, networked C4ISR, multi-tiered surface and airborne weapon systems etc.

Next, a term gradually becoming more applicable, is the newer (for us) role of 'projection' of Indian interests. This requires long-range presence, persistence, 'forward basing arrangements' at other than on our island territories. Our 'projection' would be in the form of a benign presence and assistance to friendly nations for their contingencies. I do not deny that such projection can raise the hackles of others doing the same sort of thing, because implicit in projection is deterrence and demonstration of will a marking of territory in a way. But we have to use our diplomacy to counter that.

'Peace-time' applications, the 4thP of aerospace power is growing and is perhaps the most visible demonstration and utility both internal and external, from airlift and surveillance, to possible offensive action. Military diplomacy is yet another application that has increased in recent years and has yielded handsome friendship dividends ; generating a bonhomie and bonding that amazingly rub off even at the highest levels. Well, this too is a form of projection and of taking stock of ones capabilities and a measure of the other.

Operationalising the Strategy

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 our requirements and our environment, so that we at each point in time have appropriate and adequate capability, vis-à-vis possible adversaries. I imply a time-based capability creation plan.

If we are to protect and project remote or distant interests, along with FRA, AAR, AWACS etc., we must also network all our assets and nodes for effective C2. That in turn will depend upon how much we can exploit 'space'. Perhaps more than any other, it is air power that is most significantly enhanced by the integration of space-enabled capabilities in its operations. There are, in essence, significant doctrinal similarities between 'air' and 'space'; such as long reach, flexibility of response in any situation ; over-the-hill vision etc. Indeed and

irrefutably the accepted logical progression for any modern air force the world over, is to evolve into an aerospace force.

A comprehensive modernization must have a fair indigenous content; else it may be neither feasible nor competitive in the long-run. Technology acquisition must be energetically pursued and that requires a 'whole of government' effort. That indigenisation is not at the cost of our op potential, is a continuous process of evaluation, follow-up and also a bit of a gamble. In fact even in LIC and IS situations, where we face agencies with faint footprints, a technology-based response would be needed, at least by the Air Force.

All of what I just mentioned requires funding, which in turn requires convincing the Government, because some of those capabilities could be idle for long period. Our endeavour must be to aim for a 'right-sized' force with 'appropriate' capabilities and that as I said before, is with reference to time and the anticipated rise in capabilities that surround us. We cannot plan merely an incremental build-up.

It is also a good strategy to develop synergy, cooperation and interoperability with civil aviation. This would enhance efficiency, reduce costs and save time. That is quite a task, but we are at it and hope that civil aviation will match our initiatives.

All changes, additions and technology infusion would impact our personnel. In fact our air warriors are and will remain our greatest assets. But we must be able to select the best and train them right. At the same time we must also have the courage to change our organizational structures and processes to reflect new capabilities and changed doctrines. Keeping up with changes requires a lot of forward planning, vision and anticipation. It is here that such seminars and the thinking they generate can help.

There is one other strategy and this is maximizing what we have, to preserve our assets, institutions and processes and prevent neglect. There is a need to pay attention to all aspects and not merely the new and the glamorous.

Conclusion

For our new role, we need new organizations, new structures and new level of synergy amongst civil authority, military establishments, defence production agencies, R&D organizations and the academic community. As a nation we are moving along the right path, not only with regard to economic growth but also to find our rightful place in the comity of nations. We as a nation have the strengths to meet the challenges, whether in the field of science and technology, R&D, production or war-fighting. Aerospace Power needs to grow along with the nation otherwise there would be neither national security nor economic growth.

To sum up, aerospace power is futuristic and increasingly utilitarian. India requires it in all its capabilities. The IAF has demonstrated its operational professionalism and the world has taken notice. It is our duty to grow in step with the Nation to provide it the necessary capabilities and security that it would need. We must be able to provide all options and be able to execute them once selected.

In the end I thank you for your attention and patience and wish the CASS good luck and hope to hear of thought-provoking new ideas from this eminent 'think tank'.

Jai Hind !

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CLOSING REMARKS BY THE CHAIRMAN**ADMIRAL JG NADKARNI**

Chief of the Air Staff, Air Chief Marshal Major, Mrs. Malse, Air Chief Marshal Moolgavkar, General Aditya Singh, Air Marshal KD Singh, Air Marshal Randhawa Air Commodore Jasjit Singh, Air Marshal Kulkarni, distinguished guests, ladies and gentlemen.

About 16 years ago. A wonderful thing happened to me in Pune. I had retired from the Indian Navy in December, 1990 and we had just settled down in Pune and I was looking forward to continue my love for the game of golf. So, I happened to go for my golf club's and was hoping to get somebody to play with a game of golf and I came across an elderly gentlemen who introduced himself as Air Marshal Malse. He asked me "whether I had a partner for the game of golf and when I said I was looking for one he said "Right you are going to play with me" That golf partnership lasted 16 years and we became very fast friends. Golf is a wonderful place not only for playing the game but for an exchange of idea and small talk. It was a place for throwing ideas at each other. Every morning we started off by a bit of ragging. He ragged me about the Indian Navy and I gave it back to him ragging about the Indian Air force. That followed our talk and if you wanted ideas Yashwant Malse had about 1000 of them. He loved to bounce them off me to see what my reaction would be. In one of sessions he told me about his dream to start a think-tank in Pune. Actually I was also thinking about the same line. There are so many prominent service and civilian people settled in Pune. So I readily agreed and accepted his idea about starting some sort of an institution in Pune. Air Marshal Malse was not a man to take any idea lightly. Once he had decided to start an institute he became the moving spirit behind fulfilling that idea. I can assure you that idea could never have become a reality had it not been for his endeavour, his tenacity and his perseverance. He did everything to start off with to make sure the CASS came into being. With his contact he got Mr. PVR Rao to become the first Chairman of the Governing Council. He got Mr. S.K. Kirloskar and Mr. Naval Firodia not only to become patrons but to support us morally and with economic support. He particularly

handpicked the Governing Council. Not only that, he single handedly drafted the Articles of Association the by laws and the rules and got CASS registered and started. When we did not have a place to start the functioning of CASS he readily offered the ground floor of his bungalow in Erandawana and first few years we were functioning from there. His persuasiveness was so much that he managed to coax me into becoming the first Director of CASS. Now 15 years later when I look back on those years I realize that it was his idea, his force and single handedness which managed to create this institute of CASS which is the organization behind today's event.

Our friendship in the Golf course continued and infact the last game I played with him was in February last year just a few months before he passed way. Upto that time believe it or not he supported this institution whole heartedly attended every lecture every seminar and every meeting of CASS. It is very fitting that this great man is today being honoured by us and the high esteem in which he was held not only in Pune but throughout the Air Force is evident from the fact that the Chief of the Air Staff, Air Chief Marshal Major despite his very busy schedule readily agreed to give the first Air Marshal Malse memorial lecture, and what a treat it was to sit there and listen to the discourse. It was extremely informative, perspective and highly thought provoking talk. He has practically given us the blue print for the Indian Air Force or should we call it the aerospace force for the 21st century. Sir we are not only honoured and privileged to have you on this occasion but thank you very much for sparing your time and coming here and giving us, this wonderful talk. in honour of memory of Air Marshal Malse. I hope we will continue to honor his wonderful memory and not only his memory but honour the institution he founded. I hope he is watching from wherever he is on this occasion and I am sure he would have loved the talk given by the Air Chief and I hope this function will continue in the years to come and we will gather each year here to honour the memory of the wonderful man.

CASS OTHER PUBLICATIONS

Sl. No.	SEMINAR PROCEEDINGS	Date of Seminar
1.	"Defence and Industry"	17May 93
2.	"Use of Force in Internal Peace Keeping"	04 Dec.93
3.	"The Emergence of China : Political, Economic & Military Implications for India"	22-23 Nov.94
4.	"Human Rights : Law and Order in India"	30 Sep. 95
5.	"The Emerging Security Environment in South East Asia with Special Referenceto Myanmar : Political, Economic and Military Implication for India"	02-03 Dec.95
6.	"Challenges to India's National Security And India's Defence Preparedness"	20-21 Apr. 96
7.	"Challenges of Comprehensive Test Ban Treaty Implications for India"	28 Aug. 96
8.	"Preparing to Meet Challenges to National Security In the 21st Century - The Organisational Dimension."	30 Jan. 97
9.	"Regional Security Environment To The North-West of India With Special Reference To Afghanistan."	21-22 Mar. 97
10.	"Information Warfare"	Sep. 97
11.	"Laws of War"	09 Jan. 98
12.	"Indian Ocean - The Challenges Ahead"	06-07 Mar. 98
13.	"Pokhran II and its Implications"	01 Sep. 98
14.	"Nuclear And The World"	08 Sep. 98
15.	"The Challenge of Terrorism"	29 Oct. 98
16.	"Foreign Policy Imperatives For Nuclear India"	26-27 Feb. 99
17.	"Challenges of J&K"	04 Feb. 00
18.	"Indo-Pak Relations : Challenges Ahead"	30-31 Mar. 00
19.	"Insurgency In India - Causes & Perspectives"	28 Dec. 00
20.	"Governance In India : Challenges Ahead"	25 Jan. 01
21.	"India and China by 2020 : Political, Economic Sociological and Military Perspectives"	14-15 Mar. 01
22.	"Global Terrorism And India's Response"	19-20 Mar.02
23.	"Shri N.K. Firodia Memorial Seminar : 2002" on "Governance In India"	03 Oct.02
24.	"Globalisation And India"	19 Mar.03
25.	N.K. Firodia Memorial Seminar : 2004 "Elections And Democracy in India"	17 Feb.04
26.	"Comprehensive Security : Need of the Hour"	25-26 Feb.04
27.	"Ombudsman, Lokayuktas, Lokpals ; Concept and Working, with Special Reference to State of Maharashtra"	25 Mar.04
28.	"Comprehensive Security II : Economic And Internal Security"	03 Mar.05
29.	"India and Its Neighbours : A Regional Security Perspective"	04 Jan.06
30.	Yashwantrao Chavan Memorial Seminar : 2006 "Probity And Propriety in Public Life"	03 Feb. 06
31.	Yashwantrao Chavan Memorial Seminar : 2007 "Social Unrest in India : Challenges Ahead"	13 Mar.07
32.	"Emerging World Order And Sino Indian Relations"	21 Mar.07
33.	Air Marshal YV Malse Memorial Seminar : 2007 "Aerospace for Advanced Strategic Studie National Security Environment"	28 Jul.07

CASS OTHER PUBLICATIONS

Sl. No.	SEMINAR PROCEEDINGS	Date of Seminar
1.	"The First SLK Memorial Lecture" by Shri P.Chidambaram, Union Minister for Commerce.	Jun.95
2.	"India 2020 : An Agenda for the Nation" by Maj Gen (Retd) KS Pendse.	Feb. 96
3.	"India : The Nuclear Challenge" by Lt Gen (Retd) EA Vas, Maj Gen (Retd) KS Pendse, Dr. Col (Retd) AA Athale.	Mar. 96
4.	"Second SLK Memorial Lecture" by Dr. P.C. Alexander, Governor of Maharashtra "Citizens Rights and Indian Democracy"	Jul. 96
5.	"Third SLK Memorial Lecture", by Justice AM Ahmadi, Former Chief Justice of India "Changing Scenario of The Constitutional Values"	Aug. 97
6.	"Fourth SLK Memorial Lecture", by Dr.Abid Hussain, Vice Chairman, Rajiv Gandhi Institute of Contemporary Studies. "The Changing Pattern of India's Relations with America"	Jul. 98
7.	"Fifth SLK Memorial Lecture", by Dr. R.A. Mashelkar Director General, Council of Scientific & Industrial Research, "On Building a Globally Competitive Indian Industry : The Role of Research & Technology"	Jul. 99
8.	"SLK Memorial Lecture - 2000" by Shri K. Subrahmanyam, Converner, NSAB "Self Reliant Defence and Indian Industry"	Jul. 00
9.	"SLK Memorial Lecture - 2002" by Dr. C. Rangarajan, Governor, Andhra Pradesh "Globalization And Its Impact"	Apr. 02

CENTRE FOR ADVANCED STRATEGIC STUDIES

The Centre for Advanced Strategic Studies (CASS), Pune was registered on 21st September, 1992 under the Society's Registration Act, 1860, and as a Charitable Public Trust on 28th October, 1992, under the Bombay Charitable Public Trust Act of 1950. The Department of Scientific and Industrial Research, Ministry of Science and Technology, Government of India have accorded recognition to CASS as a Scientific and Industrial Research Institution. The Centre has been granted extension of IT exemption U/S.80G till 30.03.2008 and U/S.10(23C)(iv) for AY 2004-2005 and onwards vide Government of India Notification No.80/2007 dated 26.03.2007. Section 10(23C)(iv) gives hundred percent exemption for income of the Centre, and Section 80G gives fifty percent exemption to the donors. Extension of IT exemption U/S.35(1)(iii) which gives hundred percent exemption to donors of CASS. Renewal of extension of exemption U/S.35(1)(iii) for the period AY 01.04.2000 and onwards is expected soon.

The Centre aims at undertaking research and analysis of subjects relating to national and international security and development through seminars, discussions, publications at periodical intervals and close interaction with the faculty members and research students in allied disciplines in the Universities/Institutions and the Armed Forces. It expects to award research fellowships as soon as its corpus builds up and makes it possible. It aims to generate and promote interest among the academicians and public in these subjects with a view to making them alive to national security concerns. It has received very valuable support from the University of Pune in all its activities, specially from the Department of Defence and strategic Studies. It has an Memorandum of Understanding (MOU) with Yashwantrao Chavan Academy of Development Administration (YASHADA) enabling mutual collaboration for making available their infrastructure, publications and teaching and research activities. The Centre has held a number of seminars, panel and group discussions.

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