

# Modernisation, Logistics and Indigenisation

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**M**ODERNISATION of a country's defence potential is a dynamic process. The import of new equipment, maintenance systems and new ideas have far reaching effects on the country's industry, her war potential, strategic reserves and the fundamental concept of combat logistics. These ramifications extend beyond the borders as each acquisition of military hardware is carefully monitored and immediately matched by an equally sophisticated military deterrent by the potential enemy.

Red China's recent decision to modernise her armed forces has evoked widespread interest in not only the major armament producing countries of the West, but also her immediate neighbours. It is obvious that the reactions of the West and her neighbours very widely. China is negotiating for 50 Roll Royce engines and for facilities to manufacture them under licence. In addition she has asked for Cyber 172 computers, Messerschmidt helicopters, under-water listening devices, Crotale anti-aircraft missiles, HOT and Milan anti-tank missiles and Harrier STOL aircraft.

While the acquisition of military equipment enhances the strike capability of the Services, military thinkers are unanimous in the view that the basic problem in every country is how to ensure the constant combat readiness of the armed forces. It will be recalled that General Charles de Gaulle in his Book "Army of the Future" written prior to the Second World War, posed this question : "Does she (France) seem capable of getting the best out of her war machine at a moments notice ? Can she strike in real earnest from the very outset ? Twenty centuries answer, No". It was France's greatest tragedy that this very book, which was ignored at home, was picked up, carefully studied and applied by German General Staff to humiliate the French Army in the Second World War.

The compulsions of national strategy will reveal that the question posed above is eternal in character and the same doubts are more relevant today then they were half a century ago. The long war concept of yester-years has been replaced by the short war concept

of today. Operational readiness has to be planned and oriented to a quick and sharp short war with years of intervening years of preparation. Whether a force is required to go on the offensive at a moments notice or defend the country against a surprise attack, functional service-ability and operational readiness of the war machine is of prime importance. It is in this general process of modernisation of the armed forces that logistics, and indigenisation both play vital roles in ensuring the strategic sanctity of the battle front. Though this has all along been accepted, the operational necessity of these aspects were particularly highlighted during Yom Kippur War in 1973. General Moshe Dayan in his Book "Story of My Life"—writes of how he came under criticism for not pursuing with vigour, the Israeli plan for an indigenous rifle. He admits that Israel's war industry was not prepared for a possible war during that period and that Israel's equipment production department should have worked day and night (before the Yom Kippur War) to produce the 'Galil' rifle for the Infantry. In the years that followed, Israel quickly selected, approved and produced the "Galil", which today, is accepted as the best combat rifle in the world and a leader in the export market. The importance of logistics is evident from the low state of operational preparedness of the Barlev Line before the War. The importance of administrative vigil and logistical preparedness in war is an aspect which assumes even greater importance in a short and intense war as complacency in this field can affect the course of a campaign.

It is seen that while the combat arms and Army field formations can readily adapt themselves to changing war scenarios, it is vital that a country's Industry and the rear services are so organized that they allow the military Chiefs the necessary flexibility to achieve a military decision.

War in our context is one brief period of numerous intense combat engagements with both adversaries locked in battle till the final end or ceasefire. The ceasefire is followed by a span of relative peace, neither hot nor cold, when both sides re-arm for the next round. This period will, if we take the Middle East or our own sub-continent as precedents, extend from 7-10 years. The combat forces will undoubtedly have the requisite administrative backing but will largely have to depend upon what they have at their disposal prior to hostilities. Some military strategists and civilian advisors in the Ministry doubt the validity of this concept which suggests that the next round is merely the postponement of hostilities. This point is reiterated by the pace of military build up as forced by

international political compulsions. Pakistan today boasts of parity in armour whereas in 1971, it was not so. In the early seventies, in the air, we had a (3 : 1) advantage in supersonic fighter squadrons, whereas today the margin is 3 : 2. This numerical advantage has been offset by Pakistan by having a quality edge over our aging air fleet. On the sea, during Bangla Desh War, we had eight anti-ship missile launch platforms against none with Pakistan, whereas, today, the latter has already 7 and hopes to achieve a ratio of 25 : 15 by the early 80's. In addition to this it is necessary to mention that in 1971 Pakistan could only obtain 10 modern jet fighters from its allies to bolster its strength whereas today she could obtain 5 times or more from Libya alone (these figures have been obtained from the Times of India June 26/27, 1978). China on the other hand has land and air forces almost 4 times as large as ours and these forces are steadily increasing. In addition she has undertaken a massive rail and road construction programme in the West and South-West of the Country which gives her the enhanced capability to deploy 36 additional divisions against India within 6 months. This additional troop strength is also physically available to her as the Sino-US rapprochement has freed over 30 divisions for deployment. Thus other sectors along the Sino-Soviet border will not be affected. It is obvious that in such scenario logistics and indigenisation will play an ever increasing role in the year to come. Modernisation of the armed forces must, therefore, become a continuous process. Modernisation of the military machine is synonymous with the State of readiness of the armed forces. An out-dated military organisation cannot be expected to be responsive in present times.

#### THE CHANGING FACE OF LOGISTICS

Post war discussions of logistics were confined to the American War experience in Korea and Vietnam and were perforce restricted by the emphasis placed by Mr Robert MacNamara on economy and modern management techniques. Following the example of the Pentagon, logisticians rarely went further than to implement efforts to cut the tail in favour of the teeth. In certain cases intermediate echelons were reduced in size if not eliminated altogether. There is no gain saying the fact that this approach is a vital pre-requisite because all such proposals must operate within the constraints of finance and other parameters as may be imposed by the Government from time to time. In our case the maximum size of the Forces has been restricted. Hence every defence proposal, has to review all aspects of the problem, viz its financial impact and the possibility of corresponding reductions in other spheres.

During, World War II, the Americans had plenty of everything. The result was the corresponding growth of Ordnance and supply organisations to handle the seemingly unlimited equipment and stores. The rear areas of the field Army had huge depots and storage areas where all types of maintenance operations were performed including rebuild and industrial assembly. Even technical services have their own support systems, and quite naturally, they had no ability to render to the combat consumer one-point-service.

The Korean and Vietnam War years were characterized by the fact that the entire national (American) industrial base had not been mobilized for the war effect. There were fewer resources at hand and consequently more stringent measures were enforced to ensure their optimum utilization. The era of unlimited supplies of World War II was a thing of the past. On the otherhand the Vietnam War, particularly, was characterized by the substantial contribution of science and technology on the battle field. The equipment was becoming more complex and destructive with each new innovation. Lethality of the battle had increased manifold and emphasis was on first round kills, night navigation and night fighting capability, flying platforms, higher performance of weapons and equipment and more demands for security. This introduced the better trained technician as a vital element of the combat force. There was a realization that equipment management and its optimum utilization was the key to success. The fighting soldier also had a role to play in the maintenance of his equipment. The man-machine team had become a vital battle-winning factor of the combat zone.

Yet, the deeper ramifications of these changes was not to play an important role in American logistical planning. The reason was not due to ignorance or preoccupation with a losing military situation on the ground battle in Vietnam but the fact that the full effects of these changes are only felt by Commanders when there is parity or near parity in the technological facilities and resources available to the field forces. Under these conditions, the superiority of logistical services pays dividends. Both in Korea and in Vietnam the US Forces were technologically decades ahead of their adversaries. Hence the liability or drag imposed by outdated services was not felt. This scenarios is not applicable to the battle fields of the Middle East or the Indian sub-continent where the acquisition of a new sophisticated weapon is immediately matched by similar acquisition by the other side. In such a situation, generous dividends can be

reaped by having superior logistical organisations functioning with streamlined methods and systems.

The above statement can be best appreciated when we analyse the changes made in the US Army in recent years. In February 1969 the US Deputy Secretary of Defence established the Joint Logistics Review Board to review the logistics support provided to the combat forces during the Vietnam War. The J.L.R.B produced several significant recommendations to improve the overall logistics support. Their recommendations emphasised the need to exploit, to the maximum, the American transportation capability, particularly its sealift and airlift resources. Further it emphasised the need to test boldly engineered logistic systems exploiting the advantages inherent in well balanced transportation modes since, in the foreseeable future, the bulk of the US Army would be deployed in overseas theatres. Without dilating on the other aspects of the JLRB report, which are essentially relevant to the US, it is necessary to mention that a pragmatic appreciation of the future requirements of logistics in War was only made possible after the 1973 Yom Kippur War which provided a battle field where the adversaries were equally matched and hence provided military analysts with much needed insights into the likely problems of the future. Briefly they are as follows :—

- (a) Increased lethality of the battle field.
- (b) Repair and maintenance in combat.
- (c) Development of forward maintenance as a concept.
- (d) Feasibility of "logistic arteries".

#### INCREASED LETHALITY OF THE BATTLE-FIELD

Sophistication and advancement in weaponry have ramifications much wider in scope and magnitude than most professional soldiers are willing to accept. With technological advancements the rate of battle field attrition increases manifold and imposes a higher maintenance responsibility on the logistics staff. The Israelis were, in the Yom Kippur War, rudely surprised to learn that the face of war had dramatically changed. Moshye Dayan in his Book "Story of My Life" admits that even those who had carefully followed scientific advancements in weapon systems could not conceive that rate of destruction such weapon system would bring about. The increase

in rate of destruction is directly proportional to the accuracy of the equipment and can be seen from the table below :—

### DEVELOPMENT IN ACCURACY

<i>Increase in destruction capability in Operations</i>			
<i>Action Probabilities</i>	<i>World War II</i>	<i>Korea</i>	<i>Middle East 1973</i>
Chances of a tank gun or missiles hitting an enemy tank with its first shot	5%	33-1/3%	70%

From the above it is obvious that if holdings of spares and estimates of personnel for repair echelons are based on World War II statistics, they would be unable to cope with present day demands of the battle field. The store-holding echelons would find themselves hopelessly inadequate as greater repairs and replacement tasks would be involved within a shorter period of time. It would result in greater non-availability of spares and an increase in the routine replies to consumers confirming the stock-out of vital components. This situation is likely to effect the morale of front line units.

A short war must necessarily be intense. More weapons are deployed and more fire is brought to bear across shorter fronts over the brief period of time. More emphasis is therefore, placed on guns and armour than even before. In World War II the French had covered their main defence line, the Maginot Line, with 2000 tanks whereas the German had attacked with 3000 tanks. During the North African campaign Field Marshal Montgomery at El Alamein had 1030 tanks and Rommel about 610 tanks. On the Indian sub-continent and in the Middle East the weight of armour thrown into each successive conflict has always increased. In the Yom Kippur War the Arabs had about 5500 tanks; the Egyptians employd approximately 2200 tanks and the Syrians about the strength the Germans employed against France. From all current indications, it is reasonable to assume that the trend is unlikely to change. In fact the growing emphasis on arms sales in the World will show bigger increases of tanks and APCs in the orbats on both sides of a border. It is, therefore, all the more important that all available resources must be marshalled so as to repair and maintain the equipment so that their full impact is brought to bear on the enemy.

It should also be accepted that the consumption of ammunition on the field of battle is directly proportional to the lethality desired. The Israelis planned well and in most sectors consummed ammunition as per their expectations. Nonetheless, it is important to note that they had used more than 50% of their national ammunition stock in 18 days. This may will be a pointer to us when we know that in our case our past experience may not be the pattern for future conflicts. It therefore follows that individual scales and formation reserves should be re-designed with an eye on the next round. Unfortunately in all peace time theoretical deliberations the part played by the factors of economy and financial constraints supercedes the fears expressed by the administrative staff.

This rise in the lethality index of the battlefield has also resulted in a high wastage rates for combat vehicles. Both the Israelis and the Arabs (Egypt and Syria) lost from 25% into 33% of their inventory of tanks and APCs during the 18 day War. Such wastage figures will also apply to major assemblies and vital spares for all equipment.

#### REPAIR AND MAINTENANCE IN COMBAT

In view of the built-in element of surprise in favour of the attacker, most countries maintain large standing armies. The economic strain imposed by such large sophisticated outfits imposes on the armed forces financial constraints and quantitative limits. Thus if such forces are to have the perceived deterrent value in the concept of a short war, the forces should grow qualitatively by the introduction of more sophistication. This factor is another new challenging dimension for the logisticians who have constantly assimilated new equipment and train their personnel.

Sophistication and the qualitative growth of equipment imposes greater strain on the staff responsible for repair and maintenance. In actual combat increased lethality of the battle field compounds the problems of maintenance. Hence to meet the anticipated damage to vehicles guns and radios, the equipment down time should be the very minimum. In the Yom-Kippur War the Israelis maintenance engineers did a remarkable job and in many ways they helped to keep their formations combat worthy on the battle field. Highly qualified technical specialists from their base workshops were inducted into forward contact teams of divisions and they who went forward to carry out damage assessment and maintenance tests. They did it very efficiently using maintenance SOPs and battlefield recovery and cannibalization techniques. Instead of equipment

moving back-wards, their spares and repair personnel moved forward. During those 18 days they turned around more equipment than they owned. The effectiveness of Israeli repair and maintenance SOPs can be judged from this statement from Moshe Dayan's book "Story of my life", where he gives out the problems the General Staff faced when they became aware of their high armour casualties during the Yom Kippur War. "Formally, we had three armoured divisions on the northern front, but in fact they were very much below strength. It was possible that during the night more of our damaged tanks would be repaired". This was the confidence the planners had in their logisticians.

Recent events have more than ever highlighted the need to emphasise the man-machine concept as a war-winning factor. This is important not only during combat but in training and as the routine maintenance activity of a disciplined Unit. We have to modify our thinking and consider the soldier and his equipment as one integrated team on the battle field. Equipment Management, must therefore be equated at par with management and be accepted as an important aspect of leadership. Successful management is the absence of break-downs of equipment and not their efficient repair. One of the accepted ways of achieving this during peace time is to inculcate a sense of belonging to the equipment and associated with it is a sense of pride and responsibility.

#### EMERGENCE OF FORWARD MAINTENANCE AS A CONCEPT

In the past, rear-ward movement for administrative cover was accepted as the general principle. Equipment generally moved rearwards to re-arm, refuel and to be repaired. The Yom Kippur has seen a significant, re-orientation in the logistics structure and now the emerging concept is the re-direction of critical supplies and men forward to the material in need of the same. The sharp brief nature of the conflict, the sophistication and lethal configuration of modern weapons have emphasised the following factors :—

- (a) Need to reduce the time that tanks and other vital combat equipment is off the firing line.
- (b) Need to enhance the staying power of equipment and units and formations.

The emerging concept of Forward Maintenance envisages support functions vital to achieve the above mentioned purposes and critical to battle being carried out as far forward as possible. Responses to demands for supplies and spares must be swift and accurate.

The application of this concept for the repair of damaged equipment has already been discussed. Forward Maintenance of ammunition is already a critical requirement in battle and should be carried out as far forward as possible.

#### FLEXIBILITY OF LOGISTICS ARTERIES

Recent years have witnessed the growth or permanent fortifications almost parallel to sensitive borders. These lines of defence have been constructed at a tremendous cost and have resulted in the development of new tactical and strategical doctrines. With the development of fixed front lines based on permanent fortifications there is a growing feeling at certain directional echelons that there is a need to reduce the administrative backing presently allocated to fighting formations. They are of the conviction that actions will inevitably be fought along those defence lines and penetration will be limited. Moshe Dayan in his book "Story of my life" has pointed out that this is a fallacy of strategic planning and even Israel, in 1973, seemed to have forgotten the lessons the French, so dearly learned on the Maginot Line. He has stressed the fact that both the Barlev Line and the Second Line (this he does not disclose in detail) did not achieve their purpose because the manner in which they were utilised was different from the initial concept, which the Israeli General Staff had planned. He reiterates the point that mobile forces—tanks and artillery—if they are to retain flexibility to continue in the fight after the initial penetration, need "logistic arteries" and these forces cannot and should be tied down to fortified lines and forward outposts. It is only the existence of "Logistic arteries" which can enable mobile forces to meet the changing demands of the tactical and strategical situation. It is the complete absence of rigidity in administrative planning which can enhance the destructive power of the Army and restore to the defender the initiative so vital for the offensive. Curtailment of logistical flexibility will tend to reduce the effectiveness of the combat strike formations.

#### THE NEW DIMENSION OF INDIGENISATION

Indigenisation should not be viewed as merely a singular R&D effort in association with industry to make the country self reliant. It is to be considered as a national effort working within a tight time schedule with a tangible objectives defined as short term and long term. The short term objectives as they relate to equipment production should be so as to ensure that the military hardware intended for the armed forces appears in the field and is deployed against the enemy

well before the next round. Lead-time in planning will have to cater for the period of indepth training by the users.

Heavy expenditure on R & D is vital but for a developing country the main obstacle is finance. Our defence expenditure being one of the lowest in the World, approx 4 percent of the GNP, there is an urgent case for its increase and also the enhancement of the R & D effort. Hence the main thrust of our effort should be directed towards tangible long term key result areas. The high cost of research can be appreciated from the following statistics :—

#### COST OF RESEARCH AND DEVELOPMENT

<i>Country</i>	<i>Weapon System</i>	<i>Cost in dollars (Mil)</i>
(a) USA	B1 strategic bomber	2000
(b) UK/France 50% each	Jaguar strike/Jet trainer	380
(c) France	Avion-de Combat Future Strike aircraft	1000
(d) Sweden	Project 80, Fighter JA-37	212
(e) Japan	C1 Transport Aircraft	50
(f) West Germany	Leopard 1, Main Battle tank	25

It is certainly not intended to compare the R & D outlays of the above countries to that of India. But it does focus our attention on the need to have requirement orientated programmes and the desirability to ensure efficiency and the imperative need to cut waste. Equally important is the ability of the organisation to force the evolution of new weapon systems and their futuristic development. This is not only an essential prerequisite to success in combat but would also result in the development of advanced weaponry and it would ultimately be economical also. It is the strategic importance of advanced weapon systems, which by themselves act as deterrents to a possible aggressor and are the invisible pay-offs from such expensive R & D projects. Since the period between two successive conflicts extends approximately from 7 to 10 years indigenous projects should yield tangible results within that period. Resources must, therefore, be so allocated based on well defined priorities.

It is in this situation that the logistian or strategic planner is faced with the dilemma of which project to pursue first? This

difficulty will be evident from this hypothetical problem. A planner has the task of allocation of priorities to develop two defence projects-viz, a new medium bomber and a midget submarine. Financial outlays and time for development are identical viz 1000 crores and time for production 12 years for each. The alternative to this planning production schedule is to reduce the time for one project to 7 years by increasing its financial outlay and thereby increasing the time for the other project to 15 years.

Under normal conditions, it would be prudent to pursue both projects in a manner so that they will be available within the decade. But in a possible short war situation and when there is an arms race going in a neighbouring country it is imperative that the alternative suggested above be carefully weighed so that at least the dividends of one project are available before the next round. This is obviously based on the assumption, as perceived earlier, that a conflict is merely a postponement of hostilities by 7-10 years.

Ideally, of course, the answer would be to increase the financial outlays so as to get both the projects available within 7-10 years, but financial and other constraints on resources have to be reconciled for optimum pay-offs.

By indigenisation, we generally mean the ability to produce the required stores within the country. In a short war concept it has yet another dimension. Ordnance and other Army maintenance echelons in Israel are geared to accept and refurbish captured equipment, particularly tanks. In that country, it is accepted that they have three main sources of supply for tanks, viz outside suppliers (USA), own tanks rehabilitated by Army workshops and repairable Soviet armour captured from the Arabs. This supply concept has ensured a very high equipment availability ratio to their Armed Forces. As regards tanks, in a lighter vein, it can be said that the Russians are considered, by Israel, as the more reliable suppliers, as compared to the Americans. It will be agreed that in any Third World combat zone, even quantities upto 50 tanks, if either rehabilitated or captured and modified and immediately put into action, can make a considerable difference to the military balance in that battle area.

#### CONCLUSION

In conclusion, it will be seen that the next round will make greater demands on logisticians. The whole structure, the concept of indigenisation and logistics will be tested suddenly and to the last ounce of its combat reserve and creative ingenuity. With the present emphasis to cut the tail in favour of the teeth, the system will have

to function with lesser personnel than were available in World War II, in 1965 or 1971. Thus available personnel will be called upon to be more imaginative and sophisticated in delivering the goods and ensuring the staying power of formations.

Support organisations are tailor made to meet the needs of formations but will have to be *skilfully* engineered to meet the operational demands of each combat force for each mission. The supply, maintenance and ordnance services must orient themselves to dynamic operational scenarios in the field of combat logistics.

A truly responsive system will be characterised by continuous modernisation, efficient logistics system by reduced down-time for equipment, forward maintenance, increased reserves to combat the enhanced lethality of the modern battle fields, automation, and economical and skillful management of the available resources.