

To my darlingest  
Geeta who like me  
loves aeroplanes.

**The Aeronautics Committee Report**

**A Critique**

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April 77

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# The Aeronautics Committee Report

## A Critique

Venkatasubbiah Siddhartha

*The Air Force does not know what kind of planes it wants. Even if it does, it does not know why it wants them. When the prime customer of the aircraft industry does not do its homework, what can any committee do except dish out near-platitudes and ask for the setting up of yet another committee to do what the Air Force ought to have done?*

*The management of HAL now provides sinecures for Air Force personnel who, while knowing all about flying aeroplanes, do not have the faintest idea of how to produce them. The only way HAL can operate effectively is for it to be made independent of the Ministry of Defence. Once the Air Force states its requirements and places its orders, it should be allowed only to monitor progress intermittently on a 'milestone' basis and not continuously control the processes of research, development and production. Air Force personnel qua Air Force personnel should not be on HAL's Board.*

*In respect of civil aircraft, the Aeronautics Committee has recommended, very pertinently, that the design and manufacture of a machine for use in agriculture should be a major task for HAL and that "pressing military requirements" should not be allowed to swamp it. On other civil aircraft, however, the Committee merely says that if HAL and Indian Airlines co-operate there is scope for manufacture of aircraft to replace the F-27 and the HS-748 "in due course".*

*This casualness is most unfortunate since the only way the aircraft industry can be kept alert and productive enough so that its reaction time to meet an emergency is short, is for it to make use of the opportunities offered by the market for civil aircraft within the country and abroad.*

*India has the basic expertise for development of the aircraft industry. What is needed now is a well-funded national institution outside the Ministry of Defence which will be a marshalling yard.*

*All Research and Development activity in aeronautics and space should be the responsibility of a single independent professional body such as a Space and Aeronautics Research Commission (SPARC). SPARC should replace and take over the functions of the Aeronautics Research Council of the CSIR, the Aeronautics Research and Development Panel of the Ministry of Defence and INCOSPAR of the Atomic Energy Commission.*

ON May 15 this year, the Minister of Defence presented to Parliament a statement containing the principal recommendations of the Aeronautics Committee constituted under the chairmanship of C Subramaniam. I do not understand why the entire report was not published with only some sections omitted to preserve military secrets. After all, the British government had no inhibitions about publishing the Plowden report and that dealt with the structure and future of an aerospace industry that produces some of the most sophisticated airborne weapons systems in the world and has supplied the major proportion of the equipment of the IAF! Yet we have to be satisfied with a sketchy ministerial statement which, while saying that some of the Committee's findings are "of a classified nature", gives no indication as to why the others, especially those dealing with civil aircraft, have not been published. But we must be thankful for small mercies.

The terms of reference of the Aeronautics Committee were:

- (1) To assess the requirements of the country in respect of aircraft and allied equipment;
- (2) to survey the existing and poten-

tial sources of supply and to recommend how best indigenous sources may be tapped and capacity expanded;

- (3) to recommend measures for the planned development of the aeronautics industry including research and development so that the country as a whole may be self-sufficient in the field in the shortest possible time and in the most economic manner.

It is convenient to analyse the Committee's major recommendations under four sections. The first two deal with military and civil perspectives respectively, the third deals with organisation of Research and Development and the last is my assessment of the future of the industry in the light of the recommendations.

### I

The most important finding of the Committee, says the ministerial statement, "is the need for long-term planning in the defence area . . . The present arrangements for long term assessment of threats and formulation of long-term requirements need strengthening." Elsewhere the statement goes on: "In the opinion of the Committee, the pro-

vision of radar cover and the facilities and arrangements for the maintenance of aircraft in service should receive precedence over increases in the force level of the IAF".

Put together and freely translated, these two statements give an idea of the kind of handicap the Committee was working under. The Air Force does not know what kind of planes it wants. Even if it does, it does not know why it wants them. When the prime customer of the aircraft industry does not do its homework, what can any Committee do except dish out near-platitudes and ask for the setting up of yet another committee (the requirements committee) to do what the Air Force ought to have done by now? Before discussing the recommendations any further, it is necessary to make an essential digression and dwell on the kind of institutional arrangements that must be made if India's defence posture in general and air defence capability in particular have to develop coherence, consistency and credibility.

"Strategy" said Napoleon, "is a simple art; it's just a matter of execution." Apparently our defence services believe this to be still true. Up till the Korean War, the chief purpose of

a military establishment was to win wars. But from then on its prime purpose has changed to localising or averting them; for, as we see in West Asia and elsewhere, a war won is peace lost; there can be no absolute victor — nuclear weapons have made sure of that. The consequences for defence planning of such a fundamental change in prime purpose are profound. For the first time economics and political credibility enter into the calculation of alternative courses of action. Strategy is no longer a simple art. The theory of strategy is the theory of international relations; its execution is a matter of handling the complex interactions between rapidly changing advanced technology and evolving political doctrine. The conceptual elaboration of the theory of strategy, the understanding of technology-politics interaction and the follow-through into defence policy requires the efficient marshalling of the expertise of a large number of people from diverse disciplines. From technologists and managers through social scientists, economists, serving officers and diplomats to the practitioners of *real politik*. India has the basic expertise; there is now an acute need for a well-funded national institution outside the Ministry of Defence which will be a marshalling yard. I must emphasise, though, that I am not advocating merely an organisation like the RAND Corporation of the US which, while churning out brilliant war games, scenarios and cost-effectiveness analyses, has nevertheless not prevented the US from getting into the quagmire of Vietnam. I am asking for much more; for an organisation that has access to and makes use of the political dimension, that clearly recognises the limitations of systems analysis and that can look beyond what is generally understood by a non-zero sum game. If India does not quickly establish powerful (I mean intellectually) institutions to study and evolve strategy, future defence committees, however well meaning, will continue to be goalless and frustrated and therefore valueless. In time, sooner than we realise, India will be unable to defend itself.

To get back now to the Committee, in spite of the handicaps, it has made some valuable recommendations which, if implemented, should help to consolidate recent gains and provide the base for the immediate future. It has recommended the adoption of the rolling plan concept for the assessment of future aircraft requirements. Sweden has developed this system into a fine

art and when defence personnel go on "fact finding missions" or "study tours", as indeed they will, let Stockholm be a stop-over if not a destination. The Committee was specifically asked to examine and report on the higher management organisation of HAL. As of now, the management cadre of HAL provides convenient sinecures for Air Force personnel who, while knowing all about how to fly aeroplanes, do not have the faintest idea of how to produce them. Almost saying so in so many words, the Committee has courageously asked that such people should be replaced by others with "sound technical background and management experience". An admirable but, within the current make-up of HAL, an unimplementable suggestion. The Air Force is loathe to relinquish control; it complains that HAL does not deliver the goods and quotes the non-delivery of its firm order of HJT-16's in support. HAL meanwhile complains it can do nothing while the Air Force breathes down its neck and controls every move. The vicious circle must be cut at Vayu Sena Bhavan. As I see it, the only way HAL can operate is for it to be an independent corporation outside the Ministry of Defence but to which HAL is under permanent contract. Once the Air Force states its requirements and places its orders, it should be allowed to only intermittently monitor progress on a 'milestone' basis and not continuously control the processes of research, development and production. Air Force personnel qua Air Force personnel should not be on HAL's Board. Certainly there is no place in the internal management structure of HAL for Air Force advisers and other hangers-on.

With the Air Force not really knowing what planes it wants, the Committee must have found frivolous the Navy's ideas on the planes it wants to display on the deck of its white elephant — the VIKRANT. The Committee has obliquely asked the Navy to go and do its homework a lot better before asking for more planes. Sound advice that.

In contrast to the detailed treatment of aircraft, I find the Committee's almost shoddy treatment of guided weapons most disconcerting. It is in this area that there exists a most glaring anomaly and yet the Committee says nothing of it. The anomaly is this: while the department of defence production is responsible for the manufacture of missiles and the various

scattered units of defence research have unsuccessfully tried to develop an anti-tank missile, the sophisticated expertise on rocket propulsion, guidance and manufacture is to be found under the ambit of the Atomic Energy Commission. Why the AEC is concerned with anything other than nuclear energy is another matter, but it is a waste of scarce human and technical resources to physically and institutionally separate the points of supply of and demand for expertise. I shall return to this point when I discuss the organisation of Research and Development.

#### TECHNICAL RECOMMENDATIONS

Of the other, purely technical, recommendations one can say little. Valiant attempts have been made by HAL and the Gas Turbine Research Establishment to improve the HF-24's performance by developing a reheat system and appending it to the two lowly Orpheus engines in the existing airframe. But, however good the reheat system, and its excellence is not in doubt, you cannot violate the laws of aerodynamics. The air frame was originally designed for another engine which became unavailable when Krishna Menon rejected Bristol Siddeley's offer to develop one. Now the fuselage requires redesigning. This, apparently, is being done and, together with other improvements, it should give the HF-24 a modest supersonic capability (around Mach 1.4). The Committee has recommended that the new Advanced Ground Attack Fighter (AGAF) that HAL is working on should be built around a 'proven engine'. It would be naive to expect that purely technical reasons will influence its choice. However, when the choice is made, the political reasons which influenced it should be made public. It was wise of the Committee to recommend development of an indigenous engine simultaneously with the development of the AGAF. If we start tomorrow, we can expect an operational engine by 1980.

#### II

In respect of civil aircraft, the Committee has made a very pertinent comment on the machine for use in agriculture; that its design and manufacture is an important task for HAL and that "pressing military requirements" should not swamp it. HAL only just managed to thwart an attempt by the Food and Agriculture Ministry

to buy 300 Polish aircraft. Having rightly hogged the order HAL must now deliver. To enable it to do so, the Committee has made some detailed recommendations on the reorganisation of the production facilities at Bangalore. What these are we are not told. On other civil aircraft, the Committee has wasted an opportunity. It merely says that if HAL and Indian Airlines co-operate, there is scope for the manufacture of aircraft to replace the F-27 and the HS-748 'in due course'. I believe such co-operation and far-sighted planning is pivotal to the future of Indian air transport and of the entire aircraft industry, not just the Kanpur division of HAL. This contention is elaborated later in the discussion on the future of the industry.

### III

The entire innovation process from basic research, through applied research, development, manufacture, sales and service is one single, gapless whole. Success in innovation results when no one link in this chain is weaker than any other. It is quite pointless to proclaim that India's basic research matches that which is being conducted elsewhere if there are no returns from that research. The Committee has recognised this; but having done so, its recommendations are extremely patchy and bear the marks of a series of compromises made, perhaps, to avoid disturbing the rigid and zealously guarded class and status structure of the scientific elite in the various research units.

The Committee has recommended that design, development and manufacture should be integrated and entrusted to a single body, namely HAL. In that event, where is the logic in having two separate bodies, an Aeronautics Production Board and an Aeronautics Committee to oversee production and R and D respectively? About the places where R and D is actually done, in the various scattered units of the CSIR, the Ministry of Defence and the AEC, the Committee says nothing at all. This just will not do.

As I said earlier, it is ridiculous that the AEC should in any way be concerned with rocketry. On the one hand, the AEC denies to the missile units the expertise they sorely need and, in turn, is denied rapid access to expertise in aerodynamics, propulsion etc, that are crucial to a successful missile and space programme. What is worse, where

it does borrow technology from other units, as in the case of the NAL-developed filament wound nose-cones, the AEC not only fails to acknowledge its debt but palms off the technology as its own! Such acts, besides being unethical, sow the seeds of mistrust and the meagre flow of information and expertise that is now precariously based on personal contact between scientists, will cease altogether. Once this happens, no matter how many committees are constituted, the result will be the same: no planes, no missiles.

Informal personal contact amongst scientists and common membership of various committees are efficient but scarce and vulnerable lines of communication. They should never be the only channels. Formal lines are essential.

To my mind, all R and D activity in aeronautics and space should be the responsibility of a single, independent, professional body. This body may be a Space and Aeronautics Research Commission (SPARC) and may be composed of the present Aeronautics Research Council of the CSIR, the Aeronautics Research and Development Panel of the Ministry of Defence and INCOSPAR of the AEC. The National Aeronautics Laboratory at Bangalore should be separated from CSIR, renamed the National Aerospace Laboratories (NAL) and be operated by SPARC. The new NAL should incorporate the present NAL, the space technology laboratories of INCOSPAR and the various research units of the Ministry of Defence and the Directorate of Civil Aviation. Appended to SPARC should be offices of military requirements, collaborative projects, export intelligence and market evaluation and the Thumba site administration. Besides being ideal for the practice of single-source funding recommended by the Aeronautics Committee, such a structure will be an insulator against the future development of an Indian military-industrial complex especially when, as the Committee recommends, the private sector is involved in defence work on subcontract.

### IV

If we call as the 'inward influence' the sum of the political, strategic, economic and technical constraints on the Indian aircraft industry, then the key factor which determines its viability is the time-rate of the fluctuations in the 'inward influence' relative to the lead-time required to build an aircraft or missile. In India, fluctuations in the 'inward influence' are large and have

a time-scale of the order of a year and certainly no more than five years — the time between general elections. On the other hand, the lead-time to build an advanced weapons system is of the order of ten years. The industry just cannot hope to have a stable future so long as there is this mismatch in these time-scales. In any study of the evolution and fortunes of the aircraft industries of the world, one unmistakable trend stands out. Countries which have made an effort to match the time-scales I spoke of have stable industries from which they benefit militarily (eg, Sweden) or economically (eg, Japan). In contrast, countries which have or have had rapidly changing military procurement policies and/or very little civil work do not benefit from their aerospace industries which need artificial transfusions of public money to keep them alive (eg, Britain and Italy).

Unlike in Sweden, the major opposition parties in India do not have a say in defence planning. Given the present and likely future political texture of India, HAL cannot expect a firm military procurement policy, the 'rolling plan' notwithstanding. Thus, so long as the Air Force remains HAL's major customer, India cannot have a viable aircraft industry and must continue to depend on licensed production. But, as the Committee recognises, the industry is already too big for such a role. Nasik and Bangalore are working at less than full capacity and there will be no work for Kanpur after 1975.

So what must the planners do? It is impossible, politically, to dismantle part of the industry not the least because no government wishes to foreclose its options. If you only moth-ball part of the industry, it is an economic liability and very damaging to the morale of the people working in it; indeed, many will go down the brain-drain and it will become impossible to restart the closed sections, should this become necessary. So, to benefit from the industry, you must have a firm commitment to indigenous design, development and production of advanced weapons systems. But this, as I have said, demands a clear, stable procurement policy. It also demands minimum 'critical' quantities of resources in the form of men, money and materials. Neither the policy nor the resources exist and cannot realistically be expected to exist in the near future.

Circular arguments of the kind I

have just outlined are not uncommon even in the advanced countries. They are endemic in the less-developed ones. Successful planning is largely the art of finding a way out of them.

As I see it, there is only one way to keep the industry alert and productive enough so that its reaction time to meet an emergency is short, while still utilising its advanced technologies in the national economy. It is this: the industry must make use of the vast opportunities offered by the civil sector both in India and abroad. This is not to say that military projects must be abandoned. On the contrary the best way to ensure that the industry is responsive to rapidly changing military needs is to give it a civil base.

There is a great potential for appropriately designed aircraft of the short-

take-off-and-landing variety to help solve not only problems of development but also problems caused by development. Problems of communications, rural medical services, agriculture, birth-control, urban congestion and others where aircraft have unique advantages of effectiveness and cost over other modes of transport. Besides, aircraft-based technologies are increasingly finding applications in other modes of transport such as gas-turbine powered trains and ships (Britain is developing both). There is, unfortunately, no space to discuss further the potential for civil aircraft. The Aeronautics Committee has missed an opportunity to build a good case and one can only lament.

A phrase describes the work of the Aeronautics Committee: it lacks vision. Some of its good recommendations will

not wash politically and the darkest stains of mismanagement and bad planning will, I fear, remain in the industry. Other recommendations apply equally to any nationalised industry and are therefore unexceptional. Still others which follow logically from the earlier ones remain unsaid even though they need to be spelt out and implemented if consistency is to be preserved.

Plane-making can be the growth point not only for India's technological future but also for her social and political future. Indeed, technology is not an end in itself; technology must serve social ends. But what are these ends? We don't really know. Perhaps recommendations of repair and patch-work are all that can be expected of any committee in our essentially goal-less society.