WHAT CONSTITUTES AIR POWER?

‘It is possible to drop heavy loads of bombs on the enemy country without seriously affecting his ability to wage war, whereas a judicious strategy can yield great results even with limited bombing power.’

Stefan T. Possony, 1959

A fighter aircraft providing a public display to celebrate a national day or some other occasion of significance, or the news report of an air strike against insurgents in some far away conflict often enough represent ‘air power’ to the general public. There has also been a tendency to equate, or at least compare, the concept of air power to that of sea power. There is only superficial commonality between the two and are simplistic attempts to understand air power. Air power is extremely complex and has to be studied and understood as an independent and multifaceted power projection capability. It is an optimised combination of a number of components, some of which are not apparent to the casual observer.

Effective air power is the combined product of a large number of disparate elements, each of which is critical and indispensable. The relative importance of each of these elements may vary, but the absence of even one could prevent the optimised exploitation of the air domain. The more important elements are airborne systems, command and control, and the ability to exploit the electronic spectrum, indigenous industry, air bases, personnel and training, strategy and planning, and intelligence.

Airborne Systems. Air power is the ability to do something in and from the air, for which control of the air is an obvious pre-requisite. Control of the air can only be achieved through having sufficient numbers of airborne systems of the necessary calibre. There has been a misconception circulated in recent times that control of the air can be achieved by surface-to-air weapon systems. This is a fallacy. These surface-based weapons are ‘air-denial’ systems that can deny the use of the air domain in a clearly delineated ‘time and space’ and nothing more. Control of the air is a far broader concept. At the barest minimum it must be able to provide an uncontested bubble of airspace that can be superimposed over the surface and moved rapidly with the progress of the battle, which will provide one’s own surface forces the necessary freedom of manoeuvre. Obviously, surface-based weapons will not provide such control. The bubble, mentioned above, is normally not sufficient and free-ranging airborne combat assets will be needed to ensure adequacy of control of the air. In addition, other airborne support systems are critical to projecting air power effectively. Essentially, three things are crucial in terms of airborne systems—quantity, quality and specialisation.

Command and control and electronics. The criticality of command and control to the efficient application of air power cannot be overemphasised. Communications are critical to effective command and control and the electro-magnetic spectrum (EMS) has become the centrepiece for the generation, sustainment and employment of air power. Reliability and adequate redundancy of communications is essential for effective application of air power. The EMS is exploited by air power for all activities that it undertakes. Therefore, uninterrupted access to the spectrum has to be ensured for air power to deliver the demanded effects.
Indigenous industry. Air power is the product of technology and it is continuously being refined through technological innovations. While an indigenous aviation industry would be a ‘good-to-have’ capability, in the contemporary world, even middle-power nations will not be able to afford a self-supporting industry. The costs involved are far too high for any other than a few nations to afford. In this situation of increasing importance of technology, nations that aspire to maintain a viable air power capability must have the infrastructure necessary to accept and operate high-end technology that is vital to air power. The indigenous industry must be kept at the leading edge of technology, which in itself becomes a function of the national education base and the emphasis placed on scientific innovation in education and industry by the government. It must be noted that even a limited degree of industrial capability requires an appropriate availability level of raw materials. Air power, unfortunately, cannot be sustained by the mere importation of systems.

Air bases. Without a network of mutually supporting bases, with the necessary infrastructure, it will be impossible to apply air power. These bases in turn must have their own support networks—through access to ports and commercial hubs—to ensure an adequate supply of bulk goods such as fuel and ammunition. From a strategic perspective of national security, the geographical location of the bases also assume importance. The location of bases would have a direct impact on the selection of the airborne weapons systems as well as on the doctrine, strategy and concept of operations. The air bases also need protection since they are the nests where the offensive capabilities of air power are developed and nurtured.

Personnel and training. The personnel requirements to project power through the air is fairly high. Even though ‘uninhabited’ systems are becoming increasingly more effective, the number of people required to support, maintain and operate them efficiently is as many as required for inhabited systems. From a combat application point of view, the numbers required have not changed in the past few decades. In fact the technological sophistication of modern airborne systems demands a larger number of highly trained support personnel. This demand increases the training requirements in terms of both time and educational requirements. The importance and requirement for adequate training is often overlooked, especially in discussions of air power in the public domain.

Strategy and planning. The success or otherwise of the employment of air power is directly influenced by the development of strategy and also the deliberate planning that is done before the actual outbreak of hostilities. The application of air power is influenced, directly and indirectly, by a large number of factors. They have to be taken into account in the planning of the air campaign, a process that can be ignored only at the peril of failure. Air power can only be applied effectively if it is done within the broad strategy that is effective. Even the best air power capability will be of little use if it is employed within the ambit of a faulty strategy. Planning and strategy are the two foundational pillars upon which the elevated status of air power is built.

Intelligence. Situational awareness is the key to effectiveness in battle and is equally true for the application of air power. However, air power has the inherent capacity to gather and synthesise data to create what could be termed ‘actionable’ intelligence, in much greater detail and more rapidly than other domain-centric military forces. Intelligence, gathered by airborne assets and then disseminated as required forms the basis of planning and operations. This is fundamental for the application of air power.

There are other elements such as morale, logistics, research and some support services that constitute the holistic concept of air power. Even with the necessary constituents being made available, there is an intangible factor in developing and maintaining air power with the necessary staying power—the ability of the nation to evolve a sustainable ‘industrialised life’ for its citizens. This is so because air power is inherently a technology-enabled capability. Air power is influenced by a number of elements that are variable and can neither be exactly determined nor fully controlled. A nation that does not have a clear understanding of these variables and an appreciation of the elements that constitute air power will fail to take advantage of the enormous potential that air power brings.

Key Points

- **Air power is extremely complex and has to be studied and understood as an independent and multifaceted power projection capability.**
- **Effective air power is the combined product of a large number of variable elements, each of which is critical and indispensable.**
- **A practical national approach to industrialisation is critical for the development of air power.**