PATHFINDER
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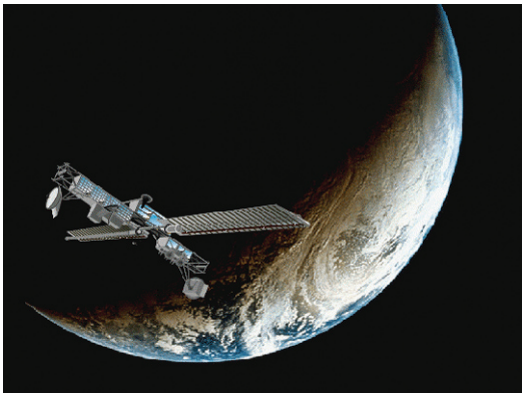
ENABLERS - THE CRITICAL FACTOR

Although the youngest of force projection capabilities, air power has carved a distinct niche for itself not only as a purely military capability but also as an asset that can be brought to bear in disparate situations in support of national policy. This rise to prominence, in a short span of a century, has been made possible because of two complimentary factors. First, the continuous push by the commercial scientific community to enlarge the envelope of technology that provide air power with its operational capabilities and second, the willingness of the practitioners of air power to experiment with emerging technology in order to refine such capabilities. The combination of these two factors has created a cascading enhancement of air power capabilities, especially in the past few decades.

There is also a downside to this success story. As technology has continued to enhance air power capabilities and provide planners with increased options for its application, the cost factor has also surged, at times in a disproportionate way. This has resulted in a balanced force of high-end air power capabilities moving beyond the reach of even comparatively rich nations. Capabilities ranging from the benign use of airlift in humanitarian assistance to the forceful application of precision strike have become far too expensive to procure and maintain. The outcome has been the selective maintenance of particular capabilities by most of the air forces around the world. Maintaining the complete suite of capabilities in adequate measure is now prohibitively expensive and governments around the world are questioning the need for such expenditure.

While the core function of air power remains force projection in a military sense, in this scenario, capabilities that have been traditionally viewed as supporting the core function assume critical importance. These support capabilities are known variously as ‘force multipliers’ and ‘enablers’. Irrespective of the designation, what they achieve is a tangible improvement in capabilities while ensuring that the number of assets remains within the resource availability thereby achieving a great deal of cost-effectiveness. These enablers are more technology reliant than most air power applications. The major enablers are space-based assets, early warning devices, electronic warfare assets and air-to-air refuelling capabilities.



Space-based assets cover a large swath of capabilities. Currently the majority of surveillance and reconnaissance functions are done from space and this leads to targeting functions. Another area where space assets are almost omnipresent in their usage is communications. From being sparingly used even a decade ago, space communications have become the centrepiece of all military communication systems. It can be said without any doubt that military operations of any magnitude are now heavily reliant on space-based communications for their success. From an air power perspective, these communications in conjunction with navigational systems like the Global Positioning System (GPS) are vital to the success of any mission. Further, the accuracy of targeting and the precision of weapon strike are both direct functions of these enablers. The exactness of air power application, which has become its signature and the primary reason for its preference as a force of first choice and a tool of political deterrence, is achieved through the appropriate application of space-based assets.

Even when air power is not being employed in an offensive or coercive manner, there is a need to deploy adequate defensive capabilities. The improvements in Airborne Early Warning and Control (AEW&C) capabilities now provide a measure of assurance to air defence capabilities and greatly enhance offensive applications. Some form of AEW&C is now considered a baseline requisite for effective air control, even when such control is delineated in time and space.

The advent of such capabilities is based on the availability of advanced technology and therefore Electronic Warfare (EW) capabilities have assumed increased importance. Effective EW can create a zone of complete silence that can be exploited to great advantage by an efficient adversary. The need to have sufficiently capable EW and also the capability to counter enemy action in the EW sphere is a necessity in the modern battlefield. Appropriate application of EW can make even a large force blind and ineffective. The importance of EW assets will only increase in the future with reliance on communications and other space-based assets becoming a prerequisite for effective air power application.

Historically range and reach have been a weak link in the employment of air power. The advent of air-to-air refuelling (AAR) has neutralised this perceived disadvantage. With AAR air power now has truly global reach. The outcome is the capability for a force to project air power anywhere and deliver the necessary force, whether it is the deployment of Special Forces or a direct strike on some centre of gravity. The rapidity with which air power can achieve such a strike has greatly increased the flexibility in its employment in support of national security requirements.

While the major enablers discussed above have become critical to the successful employment of air power, it must also be borne in mind that all of them by themselves are expensive capabilities to obtain, maintain and operate. Their cost-effectiveness is apparent in the enhancement of air power capabilities that they bring about and is a comparative assessment. The quantum of enablers needed and the types that an air force should aspire to acquire will be a direct function of the role that air force is expected to play in the pursuit of national security. The only hard fact is that without adequate enablers, no air force can be expected to deliver air power in a cost-effective manner for any given time.

We should base our security upon military formations which make maximum use of science and technology in order to minimise numbers of men.

- Dwight D. Eisenhower

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