A Fresh Look at Air Power Doctrine

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BOOKS BY THE AUTHOR

Papers on Air Power
Pathways to Victory
Red Air: Politics in Russian Air Power
Australian Security in the Asian Century

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FOREWORD

The international security scenario has changed since the 1990s. The change unfortunately has not been towards making the world a more peaceful place and is pushing constantly towards a more violent and unstable global scenario. Today, a sense of uncertainty visibly pervades every action that is undertaken—from the individual level to the highest level of a nation. Considerations that would not have entered the discussion even twenty years ago are now the prime concerns of decision-makers.

There is an unstated reluctance to view the current strategic security environment as dividing the world into two camps. However, there is general acceptance that the threats posed by ideological extremists, both religious and political, are ranged primarily against the secular and democratic nations of the world. That the majority of these nations are in the so called 'developed' world, and are also predominantly 'western', makes this schism much more difficult to explain openly. This has affected the actions that stable nations are willing to take in response to overt and covert acts, lethal or otherwise, aimed against sovereign nations. Religious fundamentalist extremist groups have been able to twist anti-colonial feeling within the 'developing' post-colonial nations to suit their operational requirements. More than two hundred years of world history is being leveraged in an attempt to make the division of the world an open wound.

The changing trend in broader security threats was visible well before it erupted with the 11 September 2001 attacks in New York and Washington. At that time the democratic world had not yet come to terms with the rise in anti-colonial, anti-western, anti-democratic, anti-non-Muslim sentiments in the more volatile, and poorer, regions of the world. The speed with which events have unfolded

after these attacks has not presented the free, stable, democratic world with sufficient time to grasp the situation and think through long-lasting solutions. The result has been an overwhelming reliance on military responses to threats, problems and issues most of which are not prone to being solved by military actions alone.

This situation has placed the military forces of the democratic world in a position of increased responsibility where they are being tasked to operate far outside their usually accepted roles. This monograph does not consider, discuss or even allude to the appropriateness of this situation and whether or not military forces should take on a larger role in the functioning of the nation, or whether the force structure of the overall armed forces—regular military, armed militia, police force, border protection force, or coast guard—needs to be revamped to cater for the emerging security scenario. It accepts the shift in the way that military forces are now employed as likely to continue for a reasonably long period of time. Maintaining that as a non-negotiable and unchanging fact, the monograph examines the doctrinal and strategic implications of this completely altered operational employment of the military forces.

This monograph argues the need to reassess the current doctrine development process in view of the contemporary changes that have taken place in the conduct of war using a historical context. Using historical analysis as a backdrop is instructive. Although the monograph does not contain any detailed analysis of the history of the changing nature of warfare, it is most informative to take a broad, overarching look at its evolution. The Westphalian state system, established in the mid-seventeenth century, was a deliberate attempt within Europe to contain long, drawnout and destabilising wars by exercising restraint. However, industrial capabilities and the resources of states made 'total war' a possibility and led to the two World Wars of the twentieth century. Although the Cold War that followed the end of World War II made total war improbable, it turned the trend towards limited wars and revolutionary guerrilla warfare.

The end of the Cold War established that the paradigm of large wars, like the World Wars, is definitely a thing of the past. However, it brought about two different trends. First, there have been more intrastate wars in the form of political and/or religious insurgencies, military take-over of democratic nations amid violent unrest and civil war—often including premeditated ethnic cleansing. The second trend is of trans-state wars in the form of global terrorism, drug-trafficking and other international criminal activities that tend to destabilise marginally stable smaller economies. These new wars need to be understood within the context of the contemporary international security environment.

This monograph analyses military doctrine, with particular emphasis on air power doctrine, from two distinct perspectives. It draws out the complex relationship and overlapping interaction between national security doctrine and strategic military doctrine. It also explains the interesting interplay between theory and doctrine. This is done by examining the factors—some of which are so innate and complex that they tend to be ignored at times—that affect the nature of theory and the development of doctrine and how the two intertwine to create a viable military doctrine.

It is accepted that doctrinal review and evolution are required for all three arms of the military. This process will be unique to each of them in terms of the timeframe involved, the quantum of change required to correctly align the doctrine, the commitment to progressing jointness and seamlessness, and most importantly, the ongoing operational tempo.

This monograph takes a detailed look at the doctrinal cornerstones of air power doctrine at the philosophical or strategic level. It examines the contribution of air power within a whole-of-government approach to national security and details the very large envelope of responsibility that air power shoulders in the current environment. It argues that it is now incumbent on air power enthusiasts to consider revisiting strategic air power doctrine.

Flexibility and other equally important air power characteristics have so far provided the air forces of democratic nations with adequate response capability to increasing demands being placed on them by governments, largely out of necessity brought on by lack of options. The doctrinal development process should not be allowed to be subsumed by the heightened operational tempo, but must be consciously kept humming in the background at its own measured speed. Only then will it be able to produce the necessary changes to extant doctrine at the opportune time without adversely affecting operations. Unless this can be done effectively, air forces will gradually find themselves becoming less effective and efficient. This is not a viable option even in the most benign security environment.

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Understanding requires theory; theory requires abstraction; and abstraction requires the simplification and ordering of reality. Obviously, the real world is one of blends, irrationalities, and incongruities: actual personalities, institutions and beliefs do not fit into neat logical categories. Yet neat logical categories are necessary if man is to think profitably about the real world in which he lives and to derive from its lessons for broader application and use.

Samuel P. Huntington[1]

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1   Quoted in Charles M. Westenhoff, *Military Air Power: The Cadre Digest of Air Power Opinions and Thought,* Air University Press, Alabama, 1990, p. 173.

INTRODUCTION

The Australian Government articulated a whole-of-government approach to national security in 1997, more than a decade ago. This formed the basis for the subsequent refinement of the concept to the current national effects-based approach to ensuring the nation's security. This is a nuanced concept and calls on all elements of national power to function cohesively, during peace and in times of conflict, to optimally assure the nation's security. This change in methodology was necessitated by the emergent international security environment after the end of the Cold War.

Since the 1990s, global events have fundamentally changed the security environment, the impact of which has been felt in all democratic nations. From a security perspective the world has become extremely complex, and seemingly the possibility of peaceful co-existence between nations, cultures, religions and ethnicities is becoming ever more ephemeral. Further, the changes in the type and the rapid rate of evolution of potential threats emerging against the democratic world have increased the global geo-political instability and strategic uncertainty.

The Cold War era was one of certainties, now replaced by a world that has become increasingly fragmented, violent and unpredictable. A new set of adversaries, with ideologies that are incompatible with the values that are held dear by the majority of the democratic world have conspicuously emerged in the last decade. Their conflict strategy is based on evading the conventional military might of the developed world and attacking 'soft' civilian targets that creates the maximum psychological effect. This is the most potent use of asymmetry. This strategy has also demonstrated the limitations of conventional military forces when used against such threats. In warfare, asymmetry will always be a natural phenomenon wherein

the weaker antagonist will strive to adopt stratagems to negate the stronger one's advantages. The reliance on asymmetry and other unconventional methods by the adversary to wage war has increased the common belief—belied by history and even current events as naïve at best—that traditional state-on-state conflicts are unlikely to occur.

The contemporary trend is for developed nations to undertake crisis management and stabilisation operations to prevent emerging situations from growing out of control, especially in the more volatile and weakly governed areas of the world. Military power has enormous capacity to crush and destroy; however, experience shows that its ability to control emerging situations and to impose and maintain order is far less. Therefore, these operations require the participation of a range of agencies not traditionally involved in security operations to ensure their success. The role of the military forces in these operations will only be to create a secure environment for the other agencies to function, which will also need conventional military capabilities. There is a dichotomy in the move away from conventional conflict and the need for nation-states to continue to maintain effective conventional military forces to stabilise potential trouble zones.

On the positive side, the changed strategic environment has forced a clear understanding, at the grand strategic level at least, that national security cannot be ensured purely by a competent military force and that the enhanced view of national security requires a broader approach. A national effects-based approach to security is the concept that embodies this reality. This is not a new concept, but one that has re-emerged and become more visible since the end of the Cold War.

Even though the necessity for such an approach has been accepted, there is still a lack of a coherent doctrine that clearly articulates this more encompassing approach. This has led to strictures in the downward percolation of this concept to most agencies other

than the military. This lack of commitment by government and non-government agencies that should be comprehensively involved has resulted in an unusually high commitment of the military forces to a very wide range of tasks—from pure humanitarian assistance to high-end warfare—in the pursuit of national security.

It is to the credit of the military forces of almost all the developed democracies that they have acquitted themselves well under these trying and mostly vague situations and commitments. The inherent flexibility and adaptability of military forces have stood them in good stead since the 1990s when the initial changes in the employment of military forces started to manifest. However, the constant recourse to *ad hoc* arrangements to meet the varied tasks is now gradually eroding the very strength on which such arrangements successfully ride.

The acceptance of a national effects-based approach as the foundation to meet national security demands a review of the doctrine development process to ensure that strategic military doctrine is completely aligned to national security doctrine. It is now clear that military doctrine and strategy can no longer be developed in isolation. To be relevant, it must be developed in conjunction with the doctrine that shapes the contribution of other government agencies to national security. This will have a profound influence on the orientation and development of strategic military doctrine.

Air power has been at the forefront of the current trend of increased employment of military forces, especially in shaping non-combat situations where speed of response and extended range are critical factors. The large spread of the spectrum of possible air power employment; the difficult circumstances under which they can be employed; and the direct impact of their missions on the broader national security equation has made air force missions strategically crucial. This enhanced employment spectrum of air power also demands that such actions be supported and guided by well-

formulated doctrine. Ad hoc measures to adapt extant doctrine would perhaps help tide over the immediate need, but it will be difficult to ensure their long term veracity.

Considering the changes that are taking place in the national security doctrine, articulated or implicit, there is a need to take a fresh look at the philosophical or strategic level military doctrine to ensure that they are in consonance. Any refinement in strategic military doctrine will need to be reflected faithfully in single-service doctrine, especially with the current focus on joint application of military force.

The issue that arises is the inadequacy of the current doctrine to guide the contemporary style and methodology of the employment of military forces. This monograph addresses this 'problem' from an air power perspective. Air forces around the world have taken steps, at times tentative, to address this emerging issue with varying levels of success. The Royal Australian Air Force's (RAAF) strategic doctrine perhaps comes closest, by virtue of the fact that it is one of the latest revisions of air power doctrine written, at least by western militaries. Therefore, it provides reasonable guidance to joint and air operations in contemporary conflict, but even RAAF doctrine would need further evolution.

In acceptance of this requirement, this monograph examines the strategic level air power doctrine and suggests the need to revisit the basics of the doctrine development process to refine them to reflect contemporary realities and the current employment of air forces.

This monograph attempts to draw the thread of doctrinal development from two distinct perspectives—one looks at the relationship between national security doctrine at the highest level and military doctrine, further drawing it down to philosophical or strategic air power doctrine; the second looks at the broader development of military doctrine and the inherent interplay of theory and doctrine before analysing the development of strategic air power doctrine within a historical timeline.

For centuries the study of warfare and the formulation of appropriate doctrine and strategy have preoccupied military leaders and philosophers alike. It is demonstrative of the ephemeral nature of war that no doctrine has proved to be flawless, forcing innovative commanders to adapt and modify the available doctrine to suit emerging situations. The foundational strength of all good military doctrine has always been its inherent capacity to evolve as an entity. To ensure its continuing relevance it is perhaps time to examine and refine the concepts that current doctrine espouses.

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NATIONAL SECURITY AND
STRATEGIC MILITARY DOCTRINE

The superior man, when resting in safety, does not forget that danger may come. When in a state of security he does not forget the possibility of ruin. When all is orderly, he does not forget that disorder may come. Thus his person is not endangered, and his States and all their clans are preserved.

Confucius (551 BC – 479 BC)

National Security

From the late 18th century to the latter part of the 20th century, the concept of national security was built on ensuring the sanctity of the geographical borders of the nation. Even the advent of air power that could transcend the restrictions of terrain and attack targets deep inside the enemy state without having to overcome the fielded surface forces of the adversary did not fundamentally change the perception of national security. However, international developments starting from the 1970s gradually changed this notion of national security. Globalisation of trade, which was inexorably tied to the economic well-being of a nation, was the harbinger of an evolving change in the way a nation-state viewed national security.

The interdependence of nations to ensure their prosperity was very clearly understood by the free world, leading to a very broad definition of national security and the imperatives that flow from it. National security is now defined in terms of national interests and is not constrained by geographical boundaries. Simultaneously, the

threat to the democratic world has also undergone a transformation; it is now ill-defined and state-less and prone to constant—and at times rapid—changes in identity and *modus operandi* to counter the increasing pressures from state security apparatus.

The world is now at the beginning of a new era of warfare, in which national military forces—in readily identifiable uniforms, and operating within the approved Law of Armed Conflict (LOAC)—are confronted with dedicated extremist groups who are not clearly identifiable and who operate without hesitation not only outside the LOAC, but outside basic human values that have been generally accepted the world over as the minimum in combat situations. The ubiquity of religious fundamentalism that transcends geographic borders impinges on cultural norms of societies, endangering nation states by creating diffused security threats. In the democratic, secular world the very basics of national security is being unavoidably and irrevocably altered into a very vague and uncomfortable form.

While the understanding of the expanded nuance of national security has been fairly well articulated, the response to direct and indirect threats to national security, at the strategic as well as operational level, has not been as well thought through. There is understanding at the grand strategic level of national policy of the changed security circumstances, but this is not complimented by an acceptance that these changes in turn demands a different response and changed application of military forces. The national security strategy does not adequately reflect these new demands being made on the military forces. This dichotomy imposes direct constraints on the further development of a military doctrine that takes into account the contribution of all elements of national power towards security of the state.

The gut reaction of the democratic nations has been to fall back on the tried and tested dependence on their military forces to assure national security, mainly influenced by the historic precedence for such actions. Contemporary threats also leverage off the element

of surprise, reducing the reaction time of the governments. This restricts the time available to think and formulate new approaches to counter the threats, further influencing the decision to employ conventional military forces as a first option. For reasons of expediency the military forces have been tasked with missions, campaigns, conflicts and wars that should not be their responsibility alone.

It is also necessary to note here the declining military experience within the civilian decision-makers in democratic nations. The nature of the democratic political system itself is changing and now requires political leaders to be dedicated to the process to the exclusion of other professional career-building experiences. From a military perspective, the whole process of prosecuting a war and employing military forces have become complex in the societal, economic and technological areas. At the same time, the understanding of the interrelation between these variables, in the context of armed conflicts, has comparatively reduced within the civilian leadership. This situation is bound to bring frustrations and tensions to the fore both within the civilian and the military leadership—that will have a detrimental impact on the decision-making process—when military forces are committed to securing the national interests, especially if it is done in a hurried, *ad hoc* manner.

From the 1990s, the employment of military forces has undergone a drastic reconstitution and the envelope of their operation has been greatly increased. In the past, when state-on-state conflicts were the norm, there were distinct phases to all conflicts—military victory was followed by the reconstruction phase carried out by different agencies with expertise in the appropriate areas. In this phase the military forces were only required to ensure the security of the participating agencies within the context of their involvement.

In contemporary conflict pure military victory does not translate automatically to the cessation of hostilities and the wars tend to

grind on to messy unsettlement. This does not provide the traditional stable, secure environment in which economic and structural reconstruction can take place. This is anathema to the causal flow that normally met the expectations of the conflict-affected community through rapid economic and social reconstruction. Since modern conflict has repeatedly failed to produce the stability required to assure reconstruction of the necessary calibre and speed, it is not surprising that governments have been increasingly forced to employ military forces in the reconstruction phase—a role that is not traditionally military in nature.

As a response to this situation, the governments of the free world have notionally put together the concept of a whole-of-government approach to national security, which is a salutary move at the highest levels. However, the governments have found it difficult to clearly explain the concept to the agencies involved and therefore have not been able to create sufficient traction within the disparate areas to operate cohesively together. This concept does not clearly delineate the role of the different agencies and the process by which they would come together. This has resulted in the response harbouring unrealistic expectations of what a modern military force can achieve; expectations that themselves have not been clearly articulated. The concept of diplomacy, information, military and economy being the primary elements of national power that will be cohesively joined and brought to bear when required has not reached maturity because of a number of reasons.

Even after more than a decade of it being articulated, this concept has still not been distilled and applied correctly. The primary reason is the failure of democratic governments to evolve a reshaped national security doctrine that clearly enunciates the changed security paradigms and the responsibilities of different agencies in pursuing security objectives at the grand strategic level. This has slowed, and in cases brought to a halt, any progress of this worthwhile concept. Under these circumstances governments have resorted to the employment of military forces in hitherto unknown

areas to fill the emergent gaps that become evident in national security. The result has been an unprecedented commitment of military forces across a spectrum of national security threats that has sorely strained the inherent flexibility and adaptability of most military forces. In addition, this has also brought about an increased operational tempo that could become unsustainable in smaller forces.

Military forces raise, train, operate and regenerate their cadre based on prevalent doctrine. Their philosophical or strategic doctrine is directly derived from the grand strategic national security doctrine stipulated by the government. During the Cold War and before the advent of the current diffused and lethal threat to global security, the national security doctrine of most democratic nations was well presented. However, the rapidity with which the world has had to confront global terror provided very limited time for nations to revamp their security models and develop appropriate doctrine. The fact that the military forces responded as they did, in an exemplary flexible manner, to the nation's needs in the face of this new threat also contributed to pushing the necessity to evolve doctrine to a secondary status.

Nation states' military forces are today stretched taut, at times reaching close to breaking point. The long term solution to this issue is to develop a coherent national security doctrine that reflects the current threats and expected responses from all elements of national power and one that is clearly documented. Such a document will provide the foundation to revitalise strategic military doctrine to reflect the current security realities and also be a positive influence in force structure and capability development in the long term. Such an approach will ensure that military forces are assured of adequate training and resource allocation, leading to operational efficiency. Further, only such a document will bring to life the almost unimplemented concept of whole-of-government approach to national security, while also allowing the military forces to evolve their own strategic doctrine within the larger national policy. Failure

to do so at the grand strategic level will definitely extinguish this worthy if faltering concept and approach to national security and bring greater responsibility on the military forces of a nation—albeit without holistic support from other national power elements.

Reliance on the military to ensure national security is not an outmoded concept. The need of the hour is to elucidate the nuanced concept of national security and the role that each element of national power plays within it, while also elaborating on the interdependence of these agencies to assure a holistic approach to security. This is a fundamental requirement to come to terms with, and prevail over, adversaries who threaten the basic values of democracy and freedom. Military forces can and do adapt willingly to emerging requirements, but such actions are at best *ad hoc* in nature. At the strategic level—national and military—*ad hoc* measures are not conducive to bringing in the long-term doctrinal stability needed to grow and sustain a whole-of-government security apparatus and a military force of the necessary calibre.

Strategic Military Doctrine

The *Foundations of Australian Military Doctrine,* ADDP-D defines doctrine as 'the body of thought on the nature, role and conduct of armed conflict. This body contains, among other things, the fundamental principles by which military forces guide their actions in support of national objectives.'[2] The philosophical doctrine of a force is the highest level of doctrine that describes the fundamental principles that underpin the force's power projection capabilities. It draws on strategic guidance to describe the conditions that shape the force and determine the Government's options for its employment. Philosophical doctrine provides foundational knowledge about

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2   Capstone Series, ADDP-D, *Foundations of Australian Military Doctrine*, ADFHQ, Canberra, July 2005, p.1-1.

military power, guidance for professional judgement in their development and application and stimulus for professional mastery in the planning and execution of military operations.[3]

> Military doctrine is distilled from the history of countless skirmishes, raids, battles, campaigns and wars and, in particular, from the lessons derived from victories, defeats and stalemates. Doctrine is developed in the context of contemporary and emerging factors that influence the way Australia intends to use military force. These factors include the impact of political, economic and social change and, in particular, the impact of new technology and the likely application of technology to the future conduct of war.[4]

At the strategic level, military doctrine contributes to the development of strategic policy and military strategy. Strategic policy is a course of action, based on certain principles, that is pursued by government to safeguard national security interests. Military strategy is a derived from the interplay of strategic policy and existing situation, guided by strategic military doctrine. In effect this is the warfighting aspect of strategic policy and through it the national security policy.

> Strategy is a profoundly pragmatic business; it is about doing things, about applying means to ends... Strategy has to deal in the first instance not with policy, but with the nature of war.
>
> Hew Strachan[5]

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3   Australian Air Publication, AAP 1000-D, *The Air Power Manual,* Air Force Headquarters, Canberra, March 2007, p.11.

4   *Foundations of Australian Military Doctrine*, pp. 1-1 – 1-2.

5   Hew Strachan, 'War and Strategy' in John Andreas Olsen (ed) *On New Wars,* Oslo Files, On Defence and Security-04/2007, Norwegian Institute of Defence Studies, Oslo, 2007, p.15.

The famous strategist, B. H Liddell Hart, defined military strategy as 'the art of distributing and applying military means to fulfil the ends of policy'.[6] In this case, policy can be equated to 'grand strategy' which is the articulation of the fundamental national security policy that is supported by all elements of national power. In contemporary terms this process is termed whole-of-government-approach to national security. Strategic military doctrine must carefully link the basic objectives of military strategy to the achievement of national security goals. Its success depends on the coordination of the ways to ensure the calculated application of the means to achieve the decided end state.

If national survival is not threatened, the end state may have to be tailored to: suit the capability of the military forces available and their ability to sustain operations for the duration required; to adhere to political and legal constraints; and to comply with the principles of proportionality and discrimination. Essentially decisions to employ military forces and the end state to be achieved will have to be tempered with the accepted assurance of the probability of success vis-à-vis the 'shape' of the outcome required.

All the different, coherent ways to optimally employ military forces share two common factors. First is to identify and target the opponent's centre(s) of gravity and, as a corollary, to protect one's own centre(s) of gravity. The identification process of the centre(s) of gravity must also have a planned appreciation that they could change very quickly in conflict. Further, critical vulnerabilities that could through minimal action be exacerbated to make them centres of gravity also need to be carefully studied. Second is the necessity to seize and maintain the initiative so that the adversary is forced to be reactive to one's own actions. This has the obvious advantage

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6   B. H. Liddell Hart, *Strategy,* (second revised edition), Meridian Penguin Books, New York, 1991, p. 321.

of retaining the capability to optimise one's own actions while retaining the advantage in the conflict.

The means to achieve military success is a complex combination of factors beyond the mere employment of available forces by innovative commanders. Success will be critically dependent on the adequacy of the training, equipment and sustainability of the forces available, underpinned by the commanders' ability to make informed decisions based on accurate and timely information and analysed intelligence. Military success is critically dependent on the commander's ability, variously referred to as the application of judgement or operational art. The nomenclature is not important, but it is necessary to understand that command ability is an eclectic mix of study, experience, wisdom, moral as well as physical courage, capability to manipulate technology and the ability to function effectively within the prescribed constraints in the pursuit of military victory.

These intangible qualities of the commander and expertise and professional competency of the force, both of which are critical for success, are bound together by the extant strategic doctrine. The direct linkage between national security doctrine and strategic military doctrine is very obvious. Single-service strategic doctrine is derived from the overarching strategic military doctrine, although national security doctrine also cascades through to them directly. However, it must also be noted that national level doctrine may not be articulated and endorsed in many instances for a number of reasons. Whether articulated or not, the underlying national ethos regarding security forms the basis for the formulation of strategic military doctrine.

Doctrine provides common guidelines without being prescriptive and enables clarity of thought in the decision-making process while engaged in conflict. Its importance lies in the commonality that its understanding provides to the execution of the overall campaign from the tactical to the strategic, thereby enabling the force to achieve laid down objectives in a focussed manner. Doctrine guides the

employment of forces while also encompassing the command and control process across all levels of warfare. In essence, it is the bubble inside which optimum employment of military forces can take place in single service, joint or coalition operations ensuring cohesiveness of a campaign at all levels through a common approach to complex warfighting. Without this guidance, military actions are more than likely to become scattered, without a shared objective focus. Coherent doctrine leads to consistent and effective collective action without constraining individual initiative in command and action.

The most discernible change in the conduct of conflict in recent times is that all forms of military action have become 'joint' and are inexorably moving towards becoming integrated in a seamless manner. However, the three environments in which conflict takes place—sea, land and air—are very different in nature from each other. They have distinctive characteristics that make the application of military force in each of the environments a specialised process. Accordingly, they are guided by independent doctrines that are developed to suit the individual complexities of the operating environments. Strategic air power doctrine highlights the generic concepts and specific factors that underpin the practical application of air power in accordance with the military doctrine in pursuance of the broader national security imperatives.

Air power doctrine has evolved significantly since the early days of military aviation and this process is on-going. No other power projection capability has changed so dramatically in such a short period as air power has, and its strategic doctrine has not only kept pace, but has been at times a driving force in directing and implementing changes. This dynamism of its doctrine is perhaps the one of the most potent characteristic that has brought air power into its pre-eminent position. Air power doctrine is continually evolving to optimise the impact of air power employed in a manner carefully tailored for a range of contexts, taking into account the emerging threat scenario and the broader global politico-security environment.

THE INTERPLAY OF
THEORY AND DOCTRINE

There is a distinct, but commonly ignored, difference between theory and doctrine. Theory by its very definition is abstract and unfettered by any consideration, constraint or even practicality. It is normally a single or set of proposed explanations whose status is still conjectural as opposed to well-established propositions that report actual fact.[7] Doctrine on the other hand is a proven, codified and prescriptive set of principles that is meant to guide the commander in the optimum employment of the assets available to him. There is a very subtle interplay between theory and the development of doctrine because theory is a fundamental input into the evolution of operational concepts that in the long term get articulated as part of doctrine. Even though the influence is indirect, it can be substantial when technology-enabled capabilities are introduced at a very rapid pace that forces the development of concepts of operations to rely on already propounded theories. The corollary is also true. Theories can lead to technological innovations that put them into practice. In both cases, air power because of its greater technology reliance is more susceptible to this interplay than any of the other military forces.

There is another aspect of the interaction between theory and doctrine that has a direct impact on the process of doctrine development—the cultural ethos of a nation and its people. While proven theory can be universal in its applicability, its influence on the formulation of doctrine will always be tinged with the conditioning responses that are steeped in the culture of a military force, which in turn is a reflection of the national cultural ethos.

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7   *The Macquarie Concise Dictionary*, Third Edition, 1998, p. 1215.

These are intangible connections that cannot be accurately mapped, but whose effects are very visible even at a cursory glance.

Nature of Theory

> The procedure used to formulate a theory is strictly irrelevant to the question of its acceptability. A meticulous inductive ascent and a wild guess are on the same footing if their deductive consequences are confirmed by observation.
>
> John Losee[8]

Theory is at best ephemeral and at worst flights of fantasy. However, well-reasoned theory is a foundational requirement for the development of innovative methods in the employment of all kinds of resources. In the military context all revolutionary changes in the conduct of warfare have been initiated by theoretical developments and subsequently carried forward by innovative concepts. The evolution of theory is influenced by a large number of major and minor factors that need to be considered to ensure its minimum veracity. These factors, although distinctly different from each other, could be grouped under three main contributory components—philosophy, historical background and contemporary perceptions.

Philosophy

Philosophy is derived primarily from three major contributory factors—ideas, values and beliefs.

Ideas. Ideas stem from a large number of sources; observation of nature, exhibited behavioural patterns of human beings, pure

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8   John Losee, *A Historical Introduction to the Philosophy of Science,* 4th ed. Oxford University Press, Oxford, 2001, p. 104.

distillation of a particular thought process etc; and can be arrived at instantaneously or gradually over a long period of time. Often they are the outcomes of attempts to solve vexing and immediate problems that last beyond the immediacy of the situation to become relevant in the longer term. Ideas are limited only by the cerebral capability of the person or persons concerned and can be the harbingers of radical change in the broader thought process of a people, nation or in extremis the world. Ideas contribute only in a secondary manner to philosophy.

Values. Values, on the other hand, are more stable because they are derived over a period of time and are not readily susceptible to change. Changes in values come about over a long period of time and may not even be discernible at times. Their longevity and stability makes values very tangibly evident and therefore, they contribute to the development of philosophy in a direct manner. However, even minor changes or variations in values affect and change philosophy directly and in direct proportion. These changes are easier to monitor and analyse than the actual changes in the values themselves.

Beliefs. The third major contributory factor in the formulation of philosophy is beliefs, which have close links to values. Beliefs by themselves are influenced by a host of inputs that range from incidents deposited in the collective memory of a community to developments in the near past and their historically in-built culture. Values underpin the development of beliefs and have a direct impact on their long-term sustainment. Although beliefs could be considered a subset of values, they are of equal importance as the other two factors in influencing philosophical development.

Considered in terms of a spectrum of their flexibility and amorphous nature, ideas on one end of it are the most abstract, and beliefs, the most rigid of the three, are at the other end. Values fit in between and their flexibility is a function of context. The predictability of any of these factors is directly proportional to their inherent

flexibility—ideas being transitory making their impact on the philosophical development being the most unpredictable.

Historical Background

One part of the genesis of all theories is historical background that plays a critical role in the collective conscious of a people and nation and directly influences the national ethos towards the application of force.

Context. Although under normal circumstances it remains an unobtrusive factor, history assumes importance within the national conscience in times of national security challenges. In the realm of military theories this factor assumes added significance, and can at certain times take over the complete process of the development of theories. Historical background in the military is mainly based on past combat and other experiences—lessons which have an overarching influence on all military thinking—that go back as far as the force can recollect its existence. Customs and traditions of service, instituted over long periods, also contribute to the refinement of this background.

Political Influence. The strategic politico-military relationship, from a historical perspective, is another major factor that contributes directly to the military understanding its background.[9] This combination of experience and political relations influencing historical background is peculiar to the military and forms an

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9   This is a contributory factor that has significant impact on the manner in which the military forces of a nation will react in times of extreme national stress caused by external or internal factors. In established democratic nations, the subservience of the military to the civilian elected government is an accepted norm. However, a number of military forces do not subscribe to the concept of the military being outside the political activity of the nation and do interfere in the day-to-day functioning of the state. Over a period of time, such interference can be conceived as necessary and become historical background to the collective memory of the military force, to the detriment of democracy.

integral part of the military make up, having a major influence on its forward thinking.

Historical background for the germination of theory would be almost completely dependent on three primary inputs—the lessons drawn from previous combat employment of the force, even if such employment has been less than successful; traditions that intrinsically direct and influence the theory formulation process; and the prevalent political stability and historical background of political influence on the military.

Contemporary Perceptions

Three major factors, the prevalent politico-economic environment, strategic appreciation process and recent, relevant, operational experiences directly affect the formulation of contemporary security perceptions and national threat analysis.

Politico-economic Environment. The most important factor to consider in gauging contemporary perceptions is the politico-economic environment that is prevalent, tempered with knowledge and understanding of the past political history within which a military force has operated. Theories and ensuing debates, especially regarding national security, are best nurtured under free governance and are normally completely stifled under authoritarian rule. History provides enough examples of military forces that were devoid of well-conceived, articulated theories and, therefore, drove themselves to oblivion when confronted with the slightest provocation. The economic stability and well-being of the nation will have a direct influence on the strength, capability and the prospective employment of the military force.

Strategic Appreciation. Strategic appreciation of the prevalent threat, balanced against the known and unbiased status of the force in-being forms the next major influence in defining contemporary perceptions. The quality of the strategic appreciation, based on the demonstrated historic veracity of the process involved, directly

influences contemporary perceptions. These perceptions encompass not only the threat scenario, but also the belief within the military and the nation regarding the chances of success of a particular course of action. Such appreciations can enhance or debilitate the development of theory.

Operational Experience. Recent operational experience plays an important part in the formulation of military theories and also feeds off historic experience from the collective memory of a force. However, there may be times when recent experiences are not in concert with historical precedent in which case contemporary perceptions will tend to be based on the more recent military experiences of the nation. This may not be the optimum way at all times. Of the three components that affect the development and nature of theory, contemporary perspective is the most influential in regard to the formulation of military theories.

Defining Theory

When the factors that contribute to the three major components have been carefully considered and distilled to analyse an emerging situation, there is the possibility of arriving at a prediction, opinion or possible explanation. Such an elucidated response can, in a very generic manner, be called theory. The indistinct nature of the very factors that contribute to facilitating the formulation of 'sound' theory also make it extremely difficult to ensure its veracity and accuracy, let alone its practicality and pragmatism. This complexity creates a problem of the distinction between theory and fantasy becoming blurred and leads to even well-formulated theory being viewed with suspicion. It is, therefore, difficult to comprehensively define theory at the best of times. In the case of air power theories, the rapid changes in its application add to this sense of vagueness that pervades the formulation of theory.

When the full spectrum of air power theory development is viewed broadly, the best theories would be the ones that plausibly explain the evolving nature of air power in all its intricacies. Opinions that can be substantiated and corroborated with actual events would be next. Predictions regarding the future possibilities and the way forward for air power would also form part of the spectrum, provided they are based on sound development process and reasoned analysis and are historically apt. Possible explanations, combined with scientifically analysed opinions and predictions can be said to form the basis for the holistic development of theoretical concepts. It has to be reiterated here that even with the most stringent control of the conceptual development process, there can be no assurance that the theory so developed will stand the test of rigorous analysis, experimentation and implementation. This situation tends to taint all theoretical concepts as being flawed in a generic manner. It further diminishes the veracity of theories and exacerbates the intricacy of the developmental process to the detriment of proper concept development.

The Development of Doctrine

The major factors that affect the development of military doctrine are theoretical concepts, historical lessons, technological developments, culture of the nation and political imperatives. These factors have to be constantly reviewed and realigned to ensure their relevance and iterate the concepts they proclaim. If for some reason doctrine becomes fully embedded in intellectual certainty it would then become dogma and thereby move out of the spectrum of possible further evolution.

Dogma does not fit into and has no value in a dynamic and evolving concept such as the effective employment of air power as a force projection capability in the pursuit of national security objectives. The greatest pitfall faced in the doctrine development process is the unclear delineation of doctrine and dogma. The true test of

good doctrine is that it retains the capability to change through time effortlessly as circumstances and experiences dictate. It is thus evolutionary and therefore, inherently unstable. When viewed in its broadest perspective the only certainty that emerges regarding doctrine is its very uncertain, imperfect and dynamic form.

Theory and History

In order to be viable but not overly prescriptive, development of doctrine must be partly based on theory and partly founded on history.[10] The contributions of these two inputs have to be judiciously blended to ensure that the doctrine so developed will be contextually and contemporarily appropriate while being relevant for a longer period of time. In other words, changes that are incorporated into doctrine must be evolutionary and not revolutionary. Land and maritime warfare doctrine have always tended to be historically based since information gathered over centuries is available in both cases for analysis and postulation of appropriate theories.

In the case of air power the historical background available, even today after a century of aviation, is scant. Obviously this was even more of an issue for the early air power theorists who tried to put forward adequate theories regarding the employment of air power in the wake of World War I. The absence of credible history may have prompted Mitchell to state, 'In the development of air power one has to look ahead and not backwards and figure out what is going to happen, not too much what has happened.'[11] It is worth noting however, that even a zealous proponent of air power like Mitchell

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10   Phillip S. Meilinger, 'Development of Air Power Theory', in Peter W. Gray & Sebastian Cox, (eds), *Air Power Leadership Theory and Practice*, The Stationary Office, London, 2002, p. 91.

11   William Mitchell (eds), *Winged Defence,* Putnam Publishers, New York, 1925, p. 20.

acknowledged the role of history in the development of doctrine by mentioning in the statement '… not too much *what has happened*'.[12]

Technology

The early air power theorists lacked a comprehensive doctrine developmental process. The limited air power capabilities of the early days of military aviation further constrained their capacity to develop appropriate doctrine. However, since air power was born off technology, there has always been an indelible connection between air power capability development and technology; a connection that has been implicitly understood and has always impacted the development of air power theories. In fact futuristic technological innovations—unavailable at the time—have formed the primary basis for the development of unproven theories that have tried to overcome the lack of historical background. These theories were based on the firm belief of what was thought to be possible with the technological breakthroughs that would occur in the future.

Early air power theorists predicted fundamental changes in the conduct of war itself as a result of the arrival of air power as a power projection capability. These have come to pass. While technology has played a part in the development of both maritime and land warfare doctrine, it has been most visible in the articulation of air power doctrine from the beginning. Technology, therefore, is a fundamental factor in the development of air power doctrine.

National Culture

Just as combat experience and national traditions are important components in the development of theory, the overall cultural ethos of a nation plays an important part in its doctrine development process. A nation's culture is influenced by a large number of factors like awareness of history, basic educational level, cohesiveness of

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12   Authors italics

national identity, robustness of governance, economic and political stability, religious and ethnic homogeneity etc. A number of these factors have an equal impact on the development of all military doctrine. However, some of them are more directly visible in the case of air power doctrine, primarily because basic aviation itself is technology-reliant for its continuous development. Therefore, the nurturing of this development requires a particular national mind-set in terms of acceptance and assimilation of technology.

The culture to convert aviation into military air power capabilities encompasses the nation's ethos regarding national security and the conduct of warfare. This has to be supported by a broad technology-education base, which is the foundation for aviation to grow, and its appropriate orientation towards the development of military capabilities. It is necessary for a nation to be 'air-minded' for the proper development of holistic aviation capabilities that are in turn vital for the development of clear air power doctrine. 'Air-mindedness' is an intangible concept that itself hinges on a number of indefinable characteristics and cannot be measured or compared with any accuracy. Nuanced analysis of the characteristics involved only provides a vague indication of a nation's air-mindedness.

Culture in this case also envelopes the overall industrial background and allied economic capability and resilience of the nation. Considering these basic requirements, it becomes obvious that only a nation that is comparatively industrialised will be able to develop and articulate an independent air power doctrine.

Political Imperatives

In well-established democracies the impact of the political process and the political and security alignment of the nation on the development of doctrine are evident at the first instance. The political directions emanating from the highest levels of government form an overarching strategic umbrella from which the national

security doctrine and the developmental basis of military doctrine are derived. Accordingly, all intellectual development regarding the development of the war-making capability of a nation will have to take place within the ambit of the political process. Political reality encompasses and influences all the elements of national power and forms the framework of the nation's security perceptions, goals and imperatives. Further, it is a direct product of the domestic socio-economic situation. Since international diplomatic relationships impact on domestic socio-economic policy development and implementation, they indirectly influence strategic doctrine development.

Political directions regarding adherence to the law of armed conflict and the rules of engagement are also becoming controlling factors in the employment of military forces in democratic nations. The legality of the application of force has, in the recent past, become a contentious issue that has divided even the 'free' world. There can be no cohesive doctrine development process without considering these intangible factors to their fullest extent. In most cases the impact of political imperatives on doctrine development will be constraining rather than facilitating. The restraining impact of political factors is perhaps felt most in the case of air power doctrine development because of: its essentially offensive nature that carries a negative connotation in international forums; its need to have a vibrant industrial and economic base for sustainment; and the close relationship between air power capabilities and the national technology base.

Conceptual Thinking

> Doctrine does not fight wars; people do. And although airmen may prefer to be 'doers,' only those who can think rigorously but creatively about future war are likely to be successful when crisis presents itself.[13]

The doctrine development process is a carefully aligned amalgam of conceptual thinking and the analysis of best practice in terms of the employment of forces. The process is complicated by the crucial influence that the four major factors—theory and history, technology, national culture and political imperatives—bring to bear with the levels of impact varying contextually. The impact of the major factors can be measured fairly accurately, provided there is clear understanding within the doctrinal process of the importance and criticality of each of the factors and the context within which they operate.

Conceptual thinking takes into account technological developments and the broader employment necessities of a military force before formulating viable doctrine. Since this is a deliberate process, it can be well controlled to ensure that it stays within the laid down, broad guidelines of national security. However, analysis of best practice is not a simple procedure. Best practice observed in the employment of forces in a particular context, by a nation operating under different rules of engagement, will have to be tailored to meet the demands of one's own nation—not always a straight forward or easy process. An added issue is that not all practice can and should be translated to doctrine because there will be times when a particular practice has a 'once-only' application. However, it would be advantageous to keep this information within the historical precedents of the force for future reference as required. Care must be exercised when using practice and conceptual thinking to influence the development of

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13   Phillip S. Meilinger, *op cit*, p. 106.

doctrine to ensure that it does not guide doctrine towards incorrect and unwanted directions.

Summary

The fundamental inputs to the development of doctrine very clearly indicate its dynamic nature and emphasise the need to continually evolve it for a military force to sustain its cutting edge capabilities. It has to be clearly understood that all the factors that influence the development of theory and doctrine are not within the control of the military forces. In fact a number of critical factors are completely outside the realm of even the slightest military influence. This is not a new phenomena; this has been true for centuries. The difference in the current security environment is that the basic concept of national security, the nature of threats to it and the state's response to the threats have all changed radically.

The change in the way military forces are being employed to support national security imperatives has enlarged the envelope of military involvement in the functioning of a state. This means that the spectrum of their capabilities also needs to be enlarged, normally within a constrained politico-economic environment. A well-formulated doctrine is the foundation from which military forces evolve to successfully meet these increased demands being placed on them.

Doctrine has always been of critical importance to the success of military operations throughout history. The need to ensure that the doctrine development process is robust and caters for even the most unexpected situation has never been more important than in the current turmoil and uncertainty of the international security environment.

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BACKGROUND TO
AIR POWER DOCTRINE

The history of air power is short, a mere hundred years, when compared to the history of mankind and warfare. However, this history has been tumultuous and air power—the ability to project power through the medium of air[14]—has always evoked strong feelings and debates regarding its impact on the conduct of war; whether or not air power was or was not decisive in any particular battle or campaign. There are also varying opinions regarding the influence of air power on the history of the world. Whatever the outcome of these debates, air power's direct and indirect influence on global politico-military and economic developments cannot be overlooked. It is a commonly accepted fact, even within all the acrimony, that the advent of air power more than a century ago, irrevocably changed the way wars are fought. Its influence on the conduct of virtually all aspects of warfare is clearly evident.

From the very beginning of aviation, air power was acknowledged as a potent force projection capability; its influence on the concept of national security strategies and the development of the security apparatus has been continuous and tangible; it has been a fundamental factor in the growth of industry and national economy; and it has been at the forefront of extreme advances in leading edge technology even in times of peace.

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14 The actual words used in the definition of 'air power' has not been kept the same throughout the manuscript to emphasise the generality of the paper. However, care has been taken to ensure that all explanatory definitions of 'air power' covey the same meaning and are in consonance with each other.

The evolution of air power as a critical military capability has been one of grand predictions and grave misunderstandings. In its infancy, the strengths it brought to the battlefield were belittled while its weaknesses were underscored for effect by its detractors. Historically, air power's attributes of range, speed, lethality and flexibility as well as the ability to concentrate firepower have, to a great extent, been counter-balanced by air base dependency for repeated utilisation, the transitory nature of aerial attacks and by the fact that aircraft by themselves could not occupy or hold land.[15] With time and maturity, the strengths have been greatly fortified and its ubiquitous combat potency has placed it in the forefront of power projection capabilities.

Even though early theorists attempted to make a point of explaining air power as an independent war winning force projection capability, there is no such fallacy visible in current air campaign and military planning. Since its inception, air power has always been, and will continue to be, an integral part of the military capabilities of a nation. It is, therefore, not surprising that the strategy for the employment of air power will, of necessity, be developed within the bounds of the broader military strategy and form an indelible part of it. Air power doctrine supports this approach and provides a dynamic foundation to optimise the application of air power to achieve national objectives while taking into account air power's own unique characteristics.

Air power doctrine is dynamic and has developed at a faster pace than land and maritime doctrines, indicated by its maturing in less than just one century. This could be attributed to the lack of historical perspective in the process because of the comparative inexperience in the conduct of air warfare as well as the rapidity with which air power capabilities have evolved. Further, technology

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15　Philip S. Meilinger, 'Ten Propositions, Regarding Air Power,' *Air Power Journal*, Spring 1996, School of Advanced Air Power Studies, USAF, Alabama, 1996, pp. 1-2.

at the cutting edge has consistently provided air power with capabilities that enabled it to be employed with maximum effect, thereby making the development of air power doctrine a rapid and continuous process.

Application of air power contributes to the furtherance of national security and its doctrine must be very clearly oriented towards providing the necessary answers to the problems facing the application of military power as a whole. The relevance of air power as an independent entity, even when operating within the joint environment, has hinged on this clarity of its doctrine throughout its developmental history.

Development of Air Power Theory – Coming of Age

> It must be remembered that in 1939 we knew nothing about air warfare.
>
> Air Chief Marshal Sir John Slessor

Change is the only constant that the history of air power throws up consistently. Throughout its existence, air power has been continuously reacting to change; either absorbing it or coming to terms with its aftermath. In no other area of military endeavour has strategic development in the broader context been so influenced by changes in technology, transportation capabilities and commercial activity.[16] However, this ready acceptance of technology has also made air power proponents in the past lay exaggerated claim to capabilities and effects that air power at that time was not able to fulfil. This tendency of air power enthusiasts to exaggerate

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16 Sir Neil Cameron, 'Air Power: Thinking About the Future,' in Dr E. J. Feuchtwanger & R.A. Mason (eds), *Air Power in the Next Generation,* The Macmillan Press Ltd., London, 1979, p.2.

its capability is a common thread throughout the history of air power application. This visible gap between the claims and actual capabilities, between prophesy and reality, has always been the Achilles' heel of not only the progress of effective air power application, but also the development of comprehensive air power theories and concepts.

Even though it had been used extensively during World War I, combat air power remained an unknown entity throughout the inter-war years. Although air power had been established as a separate entity, and a number of independent Air Forces had been formed, even at the outbreak of World War II, it was yet to prove its efficacy as a viable military capability.

From the exaggerated claims of Douhet about air power achieving victory by breaking the will of an intransient adversary, to the claims of Billy Mitchell that, 'the destinies of all people will be controlled by air power', the early theorists overstated the case for air power. This had detrimental effects on the development of compatible air power theory and doctrine as even matured thinking based on clear analysis of available technology and capabilities tended to be discarded as wishful thinking. There were concerted attempts by its detractors to discredit even genuinely demonstrated capabilities of air power. A belief that all air power theory was exaggerated and that the theorists were irresponsible mavericks had, for a time between the two World Wars, permeated the broader military strategic thinking.

Collateral Damage and Morality

In retrospect it is clear that the basic air power theory, in place at the outbreak of World War II, which greatly influenced the conduct of the campaigns, was arrived at after careful consideration of available technology and capabilities of air power and was adequate within the context. The context was the acceptance of very high collateral damage at an early stage in the prosecution of the War

that inevitably led to the unbridled employment of air power in the strategic bombing role.

The same strategic bombing campaign has repeatedly been examined and variously condemned and vilified in later years with the righteousness reserved for hindsight. An unbiased analysis would show that the campaign was planned and executed based on air power employment theories that were conceived on premises arrived at after careful study. The fact that these premises themselves proved to be incorrect has led to the air power theory and the entire campaign being questioned regarding its contribution to the overall war effort and particularly its morality from a historical perspective.[17]

Two major lessons can be distilled from this ambiguous state of affairs vis-à-vis the development of articulated air power theory. First is that the formulation of such theories has to be done with great understanding of the current capabilities of the force, and its application has to be tempered within the larger context of the campaign with a clear vision of the desired end-state. Second is that the acceptability of collateral damage is a function of the nature of morality which changes with a large number of extraneous factors. This affects the application of force and directly impinges on the effectiveness of the conduct and the achievement of the desired outcome of military action. Air power has had to answer far more than its fair share of questions on the morality of its actions, especially for operations undertaken during World War II.

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17 Morality of actions initiated in war has always been a controversial and debatable factor. In the case of the Allied Strategic Bombing Campaign most of the questions regarding its morality are being asked from the perspective of what is and what is not morally acceptable in today's world. Such analysis tends to belabour the morality issue out of context. Questions of morality should always be viewed with a clear understanding of the acceptable norms prevalent at the time and context in which the political leaders and commanders of World War II endorsed and executed the campaign.

The Battle of Britain

The Battle of Britain is the most famous air campaign of World War II and is still analysed by air power enthusiasts to assess its impact on the development of air power theory and the combat applicability of such theories. It is also one of the few campaigns that had implications for all levels of war—from the strategic to the tactical. At the strategic level, it is a classic example of how unsubstantiated claims of the prowess of air power can cloud strategic decision-making and when undelivered, eventually lead to catastrophic defeat. The claim of the *Luftwaffe* chief, Reichsmarshal Goering, that he would secure the surrender of Great Britain by air action alone, was at best an empty boast, born of an imagination bordering on the impossible. Considering air power capabilities then resident in the *Luftwaffe*, it is not surprising that the claim was not fulfilled. Their failure to subdue the Royal Air Force led to the German military abandoning cross-channel invasion plans. This strategic failure is attributed to the tactical error engineered by Goering who changed the targeting priority at a critical juncture in the battle when the Royal Air Force was almost on its last legs.

This was the first clear demonstration of how tactical decisions regarding the employment of air power percolate fairly rapidly to impact at the strategic level of decision-making. No other power projection capability has this impact, since even isolated tactical air actions—whether successful or not—can change the strategic perspectives of a whole campaign.

Impact of World War II

The War years saw the unbridled growth of air power capabilities. By the end of the World War II it was generally acknowledged that air power had come of age and was critical to winning a war. However, this was achieved in an environment of total war in which devastating attacks that caused millions of casualties to combatants and civilians alike were not only condoned but accepted as the

means to achieve total victory.[18] The formative thinking on air power theory and the attendant technological developments were conditioned by this factor. The acceptance of collateral damage as an indivisible fallout of achieving total victory continued to play an inordinately important role in the development of air power theory and doctrine for a long time.

Another development that came about at the end of World War II was that the paradigm that 'command of the air' was the sole reason for the existence of an air force as an independent entity was doctrinally enshrined as a means and an end. This emphasis on the necessity to control the third dimension, which was still in many ways an unknown environment, was primarily required to ensure the independent status of the fledgling air forces that were under constant budgetary and resource allocation pressure from the other two services. It was also necessitated by the lack of technological sophistication in the attack capabilities of air power that prohibited it from fulfilling the claims of its proponents in any effective manner. While control of the air continues to be a primary role of any air force—and is an absolute prerequisite for the success of all surface actions against an adversary with even minimal air power capabilities—it cannot be viewed as the only role that air power and air forces bring to the battlefield. Air power capabilities now transcend this narrow focus and cover a large spectrum of activities in the battlefield, spread from benign surveillance to lethal application of force. This is indicative of the growth of air power capabilities and the broader acceptance that they have achieved in military operations.

Even though air power became an effective military capability by the end of World War II, it was still plagued by a number of issues. The major problem was that its application was still flawed because

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18   Air Vice-Marshal R. A. Mason, *The Aerospace Revolution: Role Revision and Technology – An Overview,* Brassey's Defence Publishers, London, 1998, p.2.

there was insufficient understanding of the capability limitations of air power. In addition, there was also an underpinning belief that air power had already become a strategic force with the capability to strike at the heart of an adversary, buttressed by the perceived success of the Allied Strategic Bomber offensive.[19] Even with this elevation in its status as an independent and crucial warfighting capability, air power struggled to deliver on the promises and claims made by air power strategists, thereby casting a shadow on the credibility of air power theory and doctrine. The tendency to overstate the possibilities decreased the credibility of an emerging, potent capability. It is ironic that it is only in recent times, nearly ninety years later, that an optimum combination of employment concepts and technology have started to facilitate air power delivering on some of the claims and theories that were made far back in the 1920s.

From the perspective of the development of air power capabilities, World War II was a watershed event—it highlighted the deficiencies in air power theories that were propounded between the wars while reinforcing the effectiveness of air power as a critical factor in the success of any campaign. It took a further fifty years to refine air power theory and doctrine and align doctrine with concepts of operations that could be credibly delivered.

1991 Gulf War and After

For the first time in the history of air warfare, the air campaign of the 1991 Gulf War displayed an almost perfect model for the

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19 During the 1950s and well into the 1980s, the term strategic, when used to describe air forces, meant the capability to strike deep into enemy territory. The concept of actions creating strategic or tactical effects is a fairly new one and has dramatically changed the way in which air forces are classified now. For example, even a small air force is now capable of creating strategic effect by its tactical actions.

employment of air power.[20] This classic demonstration of air warfare and its merits changed the way in which air power was viewed and brought it to centre-stage with some proponents echoing the claims made almost seventy years ago that air power alone was now capable of winning wars.

Air power theory and doctrine have been severely revised after the superb display of audacious planning and exemplary execution of a taut air campaign in 1991. It completely overhauled the traditional concept of Western military operations. From there it was only a very small step for air power zealots to claim the high ground and the status for air power as the only force that could win a war on its own, with minimal collateral damage and friendly casualties. The historic thread in the development of air power theory, it can be seen, has not been broken—claims of its capabilities will continue to outstrip ground realities!

Since the early 1990s, the nature of the international geo-political, economic and strategic security environment has changed radically, dramatically constraining and altering the scope, aim and nature of war. Total war aimed at total victory can no longer be waged. This is not a subtle change and directly impacts the concept of employment of air power as a warfighting instrument, affecting its underlying theories and doctrine. In fact, the pendulum has swung fully to the other side in terms of the acceptability of military actions in war. Today, there is a noticeably increasing aversion in democratic societies to even the slightest destruction that the application of military power brings to non-combatant personnel and civil resources, even if the adversary is operating without any such considerations or constraint. For a number of reasons, the 'free' international society has succumbed to the 'no collateral damage' syndrome.

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20 Group Captain A P. N. Lambert, *The Psychology of Air Power,* RUSI Whitehall Paper No 30, Royal United Service Institute for Defence Studies, London, 1995, p. 4.

In the contemporary scenario it is not easy for a nation to resort to the Clausewitzian theory of viewing 'war as a continuation of policy'. Under these circumstances the only logical choices available to the state to protect its national security interests are through the prosecution of limited wars with very clearly defined end-states and the careful and coercive use of military capabilities as a deterrent without actually waging war.[21]

Technology, Doctrine and Air Warfare

One aspect of the conduct of war is the necessity to generate and enforce a favourable asymmetry against the adversary. The inherent characteristics of air power can be successfully adapted and oriented to create favourable asymmetric capabilities that could become war-winning factors. This ability to dynamically adapt is one of the prime reasons for the rapid evolution of air power as a pervasive warfighting force. Technology has always been a driver in the enhancement of military capabilities; a trend, by comparison, more apparent in modern history than in ancient times. Air power as a combat power projection element is the repository of technology-driven capabilities more than any other military force projection capability.

John Warden's book, *The Air Campaign,* provided the most effective template for the application of air power in history, the air campaign that led to the unequivocal coalition victory in the 1991 Gulf War. The lessons learned from the 1991 campaign led to refinements in the concepts of operations and facilitated more focussed application of air power. Together with the continuing improvements in campaign planning techniques, weapon design and technology as well as training capabilities, they have made air power the weapon of

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21 Jasjit Singh, 'Dynamics of Limited War,' *Strategic Analysis,* Vol XXIV No 7, Institute of Defence and Strategic Analysis, New Delhi, October 2000, p. 1209.

first choice in both the lethal application of force and as a tool in the international environment of overt and coercive diplomacy.

While acknowledging that technology has greatly enabled the enhancement of capabilities that air power can bring to bear, it has to be accepted that modern conflicts are conducted in many different ways, in vastly different environments and with multiple weapons systems. Therefore, no single arm or service of the military can independently wage a successful campaign, although one service may dominate the proceedings of a battle, campaign, conflict or war.

The conduct of modern conflict is complex—the desired end-state will be defined by political and strategic considerations; the military and other actions will depend on the nature of the enemy and threat posed by them, both immediate and long term; the desired end-state and the optimum course of action will determine the necessary effects to be created; which in turn will influence the selection and proportion of military instruments to be employed. The deciding factor in this train of events will always be the price—material, human and moral—that a nation is willing to pay to dominate and be victorious in conflict or war. Under these exacting conditions, military success in achieving the laid down objectives will be critically dependent on the forces being employed strictly within the prevalent, broader doctrinal guidelines.

The employment of air power as part of the larger military force is complicated because of its unique dependence on high technology. Although other forms of military power are also technology-reliant, two inter-related factors are unique to the application of air power. First, air power has to both absorb and master the rapid changes in capabilities that are brought on by the constant enlargement of technological frontiers, at times in the midst of ongoing operations. This is necessary to ensure optimum performance because air power is almost completely reliant on technology. Second, air power doctrine has to be capable of absorbing these changes in capabilities in a coherent manner or face the danger of becoming

obsolete. Doctrine is a foundational factor in determining the future capabilities of the force and has to keep pace with changing capability spectrums.

Progression of innovative technology and the development of air power doctrine are by nature dynamic processes. They both have to be adaptive to gradual and rapid changes in order to avoid stagnation and irrelevance. They are also interdependent, each generating synergistic impulses that stimulate and strengthen the other.[22] However, the combination of rapidly advancing but immature and unproven technology with a nascent, evolving and changing doctrine would lead to an unviable situation. In order to avoid this pitfall, technology and doctrine also have to act as checks and balances to each other, not letting either proceed in a random direction or pace, thereby ensuring a combined and stable development of a force projection capability in a holistic manner.

Doctrine and technology are both complex systems, responsive as well as vulnerable to external influences and pressures. The optimisation of the operational employment of air power assets is a continuous process of interaction of technology development, strategic appreciation and doctrine derivation achieved by the close interaction between scientists, planners, and operators. In order to ensure that doctrine so developed is correctly integrated with the larger national security strategy and is also cognisant of the existing technology base of the nation, its development must be done within the largest possible framework, avoiding penny-packet thinking processes.

The experience of Nazi Germany in World War II is a classic example of the failure of a nation to effectively combine the technology base with appropriate doctrine while carrying out its

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22   Dr Richard P. Hallion, 'Doctrine, Technology and Air Warfare', Keynote address to the Air Force Doctrinal Conference, Hulburt Field, Florida, Published in *Aerospace Power Journal*, Fall 1987, Air University Press, Maxwell AFB, Al, p. 1.

strategic planning, leading to disastrous consequences. German pre-war strategic planning was based on the assumption of a short and sharp tactical war and therefore the doctrine of the *Luftwaffe* and the aerospace technological development were both focussed on short duration wars. That the Germans ultimately wound up fighting a long duration multi-front war was the failure of strategic planning and not of technological insufficiency or doctrinal lacunae. The inherent flexibility in technological research and development that could be leveraged to sustain the changing needs of a long drawn war was not utilised in the early years of the war. There was a palpable schism between technology development and the strategic planning and doctrine of operation. This was amply demonstrated by the inability of the German aviation industry, despite its highly developed technology base, to produce the long-range high-payload bombers that may have conspicuously affected the final outcome of the war. It is also worth noting that the effectiveness of the scientific process and the possible interaction between technology and doctrine was stymied by external interference by higher level political leaders with inadequate understanding of the military-strategic development process. This reduced the capability of the German aviation industry to be innovative and responsive to the operational needs of the *Luftwaffe*. Further, the scientific community lacked cohesiveness and, therefore, was not able to understand the altered strategic doctrinal requirements as an entity, which led to a dichotomy wherein fanciful technologies far outstripped the doctrinal acceptability threshold of German air power. The German experience of the employment of air power in the pursuit of national military objectives will long remain a classic example of the mismatch between strategy, doctrine, technology and operational imperatives.

Towards Jointness

Even before the advent of heavier than air machines, futuristic thinkers and strategists had already conceptually encompassed the medium of air into the sphere of military activity. Therefore, it was not surprising that the militarisation of the aeroplane was perhaps the fastest induction of a new and emerging technology into warfighting capabilities. From the beginning, air power has been a crucial player in warfare. Air power can be defined as a nation's 'capacity to impose its will through the medium of air or aerospace and includes the employment of all it aviation resources, civil and military, public and private, potential and existing'.[23] Almost a century through the employment of air power as a military tool, there are enough examples of its effective application as well as inadequacies in its capabilities to make it possible to derive very clear basic theories regarding its efficacy as a core military capability.

It was also air power that gave noticeable impetus to the concept of joint operations—wherein a combination of the capabilities resident in the three environmental services are combined to achieve the objective—by acting in concert with both the navy and the army from the beginning of its becoming a military capability. Over time air power has been recognised as the primary moving force in the push to integrate the disparate military capabilities. This is not surprising, because air forces from their inception have been attuned to change.[24]

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23 Kapil Kak, 'A Century of Air Power: Lessons and Pointers,' *Strategic Analysis,* Vol XXIV No 12, March 2001, Institute of Defence and Strategic Analysis, New Delhi, 2001, p. 2111.

24 Air Forces are not the only custodians of air power and the intention here is not to propound another theory. By their independent nature, air forces are more attuned to the nuances of air power theory and application and therefore become the repositories of air power doctrine in its purest form. From this doctrinal understanding springs the capability to lead the integration process.

In less than a century of existence as an independent military arm, air force capabilities have improved so dramatically that they have been the harbingers of total revolutionary changes in the very nature of warfare. The reality is that land, maritime and air forces will combine in all future operations, but their individual contributions will not be equal and will vary dependent on the context of the operation.[25] The strategic and operational environment will determine the force structure and the lead element in a particular case. The identification of the lead element, so far done purely in geographical and environmental terms, will have to be done in terms of force type and firepower needed to assure success.

This synergy between the three primary force projection capabilities—land, maritime and air—has been significantly improved in the past few decades. From their embryonic stage in the 1991 Gulf War, the operations in Afghanistan and Iraq have graphically demonstrated the way in which disparate capabilities leverage off each other to ensure magnification of effects with minimal utilisation of resources.

It would therefore, make abundant sense for all military forces to accept the inevitability of joint operations and proceed to make this integration as effortless as possible. The actual situation however, is far from ideal and even while the principle of integration has been accepted at the strategic level there is still acrimonious debate regarding the primacy or otherwise of individual services.

Summary

From what could be termed as essentially a support role in warfighting, air power has come a long way and become the centre piece of most operations. This assumption of greater relevance and

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25 Richard P. Hallion (ed), *Air Power Confronts and Unstable World*, Brassey's Ltd, London, 1997, p.xiv.

influence has been both tangible and swift when viewed against the long history of warfare. Today there is unanimous agreement that air power undoubtedly plays a crucial role in, and has become a necessary part of, any force projection capability. These are dramatic changes in air power employment concepts and the continuing technology-facilitated improvements in its capabilities.

Air power capabilities have improved exponentially since the early 1950s. In the past decade alone air power has repeatedly proved its efficacy as the primary attack option in a number of operations. Air power's efficiency in minimising collateral damage and casualties and its unqualified success in recent conflicts has catapulted it as the force of choice in conflict situations from a political viewpoint. While there are both advantages and disadvantages that emanate from such a situation, from an air power perspective this position in the vanguard of power projection and application capability brings with it the necessity to ensure the veracity of the strategic doctrine within which it is exercised. However, air power doctrine has always been contentious—both with advocates of air power as well as with those who continue to consider air power only a support system to other warfighting capabilities.

However, as much as it is necessary to do so, strategic doctrine development has not kept pace with these changes to optimally envelope them. There is a need to analyse and reconstitute parts of strategic air power doctrine to reflect the current realities in the evolving national security imperatives, the changed nature or warfare and their impact on the employment of air assets. Further, the employment of air power as an integral part of the joint military contribution within a whole-of-government approach to national security also needs to be coherently analysed and incorporated into extant doctrine. There have also been some very innovative ways in which air power has been employed in joint operations that have direct impact on tactical doctrine that would have indirect ripple effects on the development of strategic doctrine. These changes, some of them subtle and ongoing and some of them very visible

and rapid, have to be accurately mapped and appropriately reflected in doctrine. The prevalent strategic security environment and the uncertain and diffused nature of future scenarios makes anything short of optimum doctrinal understanding of the employment of force a clear recipe for failure. The requirement to get the continuing evolutionary process of the development of a dynamic doctrine absolutely correct has never been greater.

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DOCTRINAL CORNERSTONES
OF AIR POWER REVISITED

Until the 1990s, air power was unable to fully deliver on the promise that it tantalisingly provided in the period of rapid capability improvement that followed the end of the Korean War in the 1950s. The prophesies of the early theorists and the unbending claims of latter-day air power proponents tended to give the claims an appearance of foolhardiness and tended to relegate air power to a decisive, albeit essentially support, function after control of the air had been obtained.

This factor is rooted more in a sense of inadequacy within the advocates of air power, who believe that there is still certain reluctance within military and the broader security establishment to accept air forces as equal partners in the triumvirate of force projection capabilities. It is only since the early 1990s that air power has become capable of delivering sufficient fire power with the accurate necessary to ensure freedom and adequacy of independent action in the pursuit of victory. Until technological developments permitted its offensive capabilities to be properly employed, air power was prone to play an important, but essentially support, role in offensive force projection operations. Even though air power has been able to realise long-predicted capabilities in terms of firepower delivery, there still exist some fallacies regarding air power capabilities because their contribution in the overall warfighting context is still not completely understood. Air power, therefore, has continued to be considered a vital, but not absolutely essential ingredient in some analysis of the full spectrum of war, especially if the analysis is less than holistic. This perception is reinforced by the less than optimum employment of air power in a number of

conflicts around the world between World War II and the First Gulf War, most importantly the Vietnam War.[26]

From the Gulf War of 1991, through the Bosnian conflict of 1995, Kosovo in 1999, Afghanistan in 2001 and the 2003 Iraq conflict, Western coalitions have employed air power with great flexibility, versatility and effectiveness. The context, circumstances and methodology within which air power was employed in these conflicts have been different in each case.[27] Viewed collectively at the strategic level, the doctrine base on which air power was employed in these campaigns stands apart from the doctrine and its development process of previous fifty years, in much the same way as that era itself is considered far removed from the post-World War I period of air power theory development. However, the common thread that ensures continuity in air power doctrine has been the acknowledged need to obtain and maintain air superiority as a prerequisite for the success of all military operations. From World War II onwards air power doctrine has been founded on this requirement. This has at times led to complete preoccupation with 'command of the air', to the detriment of other air power roles of equal importance in the joint context.

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26 The Vietnam War is often quoted as an example to illustrate that control of the air is not a prerequisite for victory and of the failure of air power to defeat an enemy who did not have control of the air over the surface combat areas. This view is very simplistic and does not reflect the realities on the ground. At worst it is completely biased against air power and at best an uneducated attempt at defining the employment of air power without taking into account the entire process through which US air power was employed in this war. Application of all combat forces is an involved process, starting from the planning to the end of its execution and any dilution of even a single part of the process will lead to failure of the mission, campaign or war. The US air campaign in Vietnam is a classic example of a hackneyed piecemeal application of air power, without laying down any strategic objective to be achieved. From a doctrinal point of view the Vietnam War should be considered a complete aberration in the employment of air power and only the lessons must be brought forward in the study of the conflict.

27 Tony Mason 'Rethinking the Conceptual Framework', in Peter W. Gray (ed), *Air Power Challenges for the New Century,* The Stationary Office, London, 2000, p. 209.

The Status of Control of the Air

In any conflict control of the air is a comparative state to be achieved. In terms of its effectiveness, it ranges from the one extreme of 'command of the air', through 'control of the air', 'air superiority', 'favourable air situation', 'tolerable air situation' and at the other end of the spectrum to 'air parity'. Because of its critical importance, and the fact that it is the Air Force that fights to achieve and maintain it for the requisite period of time, control of the air has now become the *sine que non* for Air Forces.

There has long been agreement on a bipartisan basis that control of the air was a prerequisite to undertake any surface or air operation with sufficient assurance of achieving success. This fact has been succinctly stated by great commanders, senior officers and strategists of all hue over the years. The acceptance of the need reinforces the reality of the situation. Control of the air is and will remain the centre piece of military operations throughout its entire spectrum. Historically, this necessitated the air forces assigning primary role status to the fight to obtain control of the air, gradually making it the *raison d'etre* for the existence of the air arm as an independent force. The absolute primacy of the concept of control of the air was cemented by the development of the concept of manoeuvre warfare, which cannot be conducted efficiently if friendly control of the air is not guaranteed. In the post-World War II years, the correlation between victory in a battle, conflict or war and the occupation of ground further added to the acceptance of the fundamental need to have control of the air.

The need to have control of the air has remained a universal truth from the advent of air power as a viable military capability. Even in contemporary operations, control of the air is considered as the first requirement for the planning and execution of subsequent joint or single service operations. The fundamentality of this requirement is lost in a number of contemporary cases, because historically no Western force has been required to fight for control of the air

or been tasked to operate without friendly control of the air since the Korean War. This has been made possible mainly because the coalitions have been led by the United States, which has brought its overwhelming air power to bear in all the conflicts. In more recent times, from the classic demonstration of this force projection capability in the 1991 Gulf War, the United States and its allies have continued to rely on air power to shape the battle space to their advantage. The achievement and continued maintenance of air superiority has become a factor that has been taken for granted by the Western forces in all situations. This has led to the development of a set of concepts of operations that are radically different from earlier concepts.

In any analysis of recent conflicts it must be very clearly understood that the outcome of a number of operations would have been radically different if control of the air had been contested even a little bit. This absolute control of the air by Western forces is an asymmetry in itself that can be leveraged favourably. The slight difference between air power application in the immediate years after World War II and contemporary conflicts is that while the necessity to control the air has not become secondary in any manner, for Western forces the effort required to establish and maintain control of the air has reduced considerably in recent years. This has resulted in the uninhibited development of other equally critical air power competencies that have become invaluable contributions to the success of joint campaigns.

There is also an inherent danger in the direction of current developments. Regarding the non-contested achievement of air superiority as the basis on which all other actions are initiated may become a sticking point in a situation where the adversary is willing to and is also capable of contesting the control of the air. Although the United States will be able to wrest control of the air from any adversary, at least for the foreseeable future, the need to contest for it would be detrimental to the larger operation and may even lead to a revised appreciation of the campaign.

The Changing Environment – Impact on Air Power Doctrine

From an air power doctrinal perspective, three distinct phases can be identified in the post-World War II era—the period between 1945 and 1990 when conventional warfare was still the primary model of conflict; the period from 1991 to 2001 when a number of factors combined to make air power the military power of choice in the prosecution of conflicts; and the ongoing period from 2001 to date when the changed nature of threats have fundamentally altered the way in which nations employ their military forces.

First Phase

A number of limited wars were fought during the first phase, most of which adhered to the basic air power doctrine of achieving air superiority and thereafter using the surplus air power capacity for other roles. While there was a notable exception to this *modus operandi* in one instance, when the Israeli Air Force went into ground attack mode without first achieving control of the air during the Yom Kippur War in 1973, all other conflicts had the opposing sides fight to obtain and maintain control of the air to the desired degree. Doctrinally there were very limited changes to the concept of air warfare during this period.[28]

Second Phase

The campaigns conducted in the second phase, starting with the Gulf War in 1991, heralded a new way of warfighting. There has been a shift in the concept of operations and the all-round conduct of warfare has undergone a major and clearly perceivable change.

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28 The impact of nuclear capabilities and the concept of Mutually Assured Destruction on basic air power doctrine and their contribution to, what some strategists believe is, the stagnation of conventional air power doctrine is not being considered in this analysis. This is because the articulated air power doctrine of the Cold War era was only a starting point in the evolution of air power application and applied only very limited influence on the subsequent doctrinal changes.

The international politico-economic and security environments have altered and are vastly different from those of the Cold War period when there was clear cut delineation of friend and foe. Along with the political flux, the way in which the military forces conduct their business—aptly named revolution in military affairs (RMA)—has also undergone a dynamic refocus. The three major campaigns during this phase; the 1991 Gulf War, the conflict in Bosnia in 1995 and the Kosovo intervention in 1999; indicate a shift in basic warfighting concepts and capabilities in the militaries of the 'First World'. The changes in the employment of air power, brought about by technological breakthroughs and conceptual innovation, have been at the forefront of this realignment of warfighting. In fact three primary reasons have ensured that the changed politico-economic environment has had maximum impact and influence in the arena of air power employment.

Philosophers would like to believe that humankind is evolving into a more kind, gentle and peaceful entity. This translates, at least in the developed world, to an attempt to prosecute wars while ensuring minimal or almost no human casualties and collateral damage to infrastructure. Failure to do so is very quickly highlighted by a media, that could at times be frenzied and biased, and one that does not take into account or publicise the complete disregard for human norms by the adversaries.[29] Therefore, the first primary reason for air power coming to the vanguard of power projection is the Western world's political aversion to casualties, both own as well as collateral damage, brought on public opinion expertly shaped by the media.

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29 The intention here is not to malign the media as a whole, but to highlight the fact that the developed world is taken to task publicly more often and for lesser acts of omission than the atrocities committed by so-called freedom fighters, insurgents, guerrilla forces, terrorists etc. There is an understandable ground swell against that segment of the media and peace support groups who are biased towards projecting the military forces as villains of the conflict at all times, while ignoring (if not actively condoning) the most abhorrent crimes of the adversary. It may be worthwhile to note here that more than sensational reporting is at stake in the on-going global struggle!

The days of World War II when strategic bombing of industrial areas and population centres to break the will of the people and subjugate the adversary was accepted and supported have become unpalatable historical facts. The Law of Armed Conflict (LOAC) does not support or condone such actions any more. Even the slightest doubt regarding the necessity to suffer or inflict damage in the pursuit of politico-military goals in a conflict has become politically unsavoury. Under these circumstances the political leadership of the democratic world has embraced the surgical precision capability of air power as a sure-fire answer to these problems. Even if it is without complete understanding of the fundamentals that guide the employment of air power, which seems to be the case in the majority of cases, the demand has been for air power to apply lethal force without any attendant complications.

While nations have perhaps become more prone to using military force in the pursuit of national objectives, they also demand a low casualty/destruction probability from them. This may be a dichotomy, but the political pressure on military forces to avoid casualties has pushed air power into the vanguard of warfighting capabilities. A combination of casualty aversion and a perceived need—once again because of political expediency—for rapidly achieving the required effects makes air strikes a convenient and preferred method to carry the fight to the adversary. Essentially this requires precision air-to-ground strike capability, a consideration that has now transcended the basic capabilities inherent in most of the air forces in the Western world. The situation has reached a stage wherein even minimally capable air forces are being politically pressured to embark on air power missions in order to mitigate the possibility of heavy casualties associated with ground operations. Under such intense pressure it is only natural that there will be a shift in the basic application of air power. Role priorities are bound to change in these dynamic circumstances.

The politico-military structure in democratic nations now demands greater performance capabilities from air power and undeniably uses

it as the first choice for power projection. In the bargain, the actual capability resident in the force by itself seems to have ceased to be an essential ingredient to the decision-making process. The capability displayed by the US air power elements has become the yard stick with which the rest are measured and there is an underlying expectation that all air forces will come up to the required standard. The air campaigns of the past decade have, therefore, moved the role prioritisation of air power into a new arena wherein strike is its predominant capability, and takes precedence over all others.

The second reason is a follow-on from the first. The enormous strides made in air power capabilities in the past two decades have brought the predictions of the early visionaries to fruition in manner that even they would find mind boggling. Air power today can apply lethal force precisely, proportionately and with a great deal of discrimination against targets that are time-sensitive. This in turn creates effects, direct and rippling, far in excess of the actual destruction of the target. The great improvement in the accuracy of weapon delivery has also made the use of air power seem an appropriate and, in an oblique manner, a more humane way to conduct the projection of power.

The third primary reason is also a result of the changing norms of political acceptability of military actions in pursuing national security objectives. The intrusive use of land forces to effect changes in the prevailing conflict situation is being increasingly viewed by the international community as aggression against a sovereign nation. An invasion of any kind is not an easily accepted act in international politics and diplomacy. The moral judgement regarding the use of force by a sovereign nation, irrespective of the provocations, has become a vexing point in the democratic, developed nations. The ongoing debate regarding the morality of the actions by the US-led coalition in Iraq, even five years after the initial invasion, is a demonstrative case in point.

The near statelessness of the emerging threats and the covert support they receive from some states makes the effective use of surface forces against them an extremely difficult proposition. These entities move across national borders very easily and conventional surface forces face the problem of not being able to enter the sovereign territory of another state without the incident becoming an international diplomatic impasse. Even the concept of 'hot-pursuit', wherein legal military forces cross borders when in contact with the adversary, has become unacceptable. This diplomatic stumbling block has made the use of surgical air strikes, both in all-out force projection and in punitive actions, a commendably attractive option. Such strikes do not require military forces to cross the border or occupy territory, and the intrusion is only transitory in nature, with very limited negative impact. The effects created by such air attacks, especially when the target has been convincingly neutralised, far outweigh the diplomatic hue and cry that would be raised against the air space violation. Politically, such actions are far easier to contain than the actual presence of troops in foreign territory.

The increased use of air power, at times in support of very limited objectives, brought to focus the requirement to refine an already distilled strategic doctrine that underpinned the employment of air power capabilities. While control of the air remained a primary requirement, doctrinal developments tended to concentrate on the strike capabilities of air power. In addition, the move towards joint operations became very apparent, even though there were voices of dissent regarding the increased use of air power that brought it to centre stage. It must also be admitted that air power practioners did not cover themselves with glory either, by their vociferous advocacy of the capability of air power 'alone' to achieve campaign objectives.

Realistic appreciation of the improved capabilities of air power and the changed political requirements in terms of the application of force made marginal changes in air power doctrine a necessity. The end result was a concerted move towards joint operational doctrine

with the roles of each environmental service clearly delineated. Air power, by its ubiquitous nature, was in the forefront of this move towards jointness. This was fortuitous, because the changes that took place in the very nature of threats demanded a greater understanding of the joint application of military forces.

Third Phase

As far as the application of air power is concerned, the third phase is almost a continuation of the second phase. The changes are very minor and mainly subtle nuances brought about by a greater overall understanding of air power capabilities within the military and the acceptance of the need to carry out joint operations to ensure tactical, operational and strategic success. The differentiation is in the radical changes taking place in the threat scenario and the adversaries' concept of operations.

The *raison d'etre* of national military forces is to ensure the security of the nation, mainly from external aggression. Traditionally therefore, they have been structured to achieve this objective efficiently. In the past few decades the definition of national security has undergone a radical change and the military forces have been automatically tasked to address the new threats. Herein lies the lacuna that has troubled the armed forces of all democratic nations for sometime now. Their structure and operational doctrine have not changed, but their employment has undergone crucial changes and the demands placed on them by the government have expanded far beyond the traditional. The inherent flexibility and adaptability of military forces have been stretched to the limit in order to meet these demands. With no change to the threats in sight, perhaps it is now necessary to revisit the doctrinal requirements that underpin the employment of military forces.

The nature of war has changed and the inherent characteristics of air power need to be carefully adapted to fit the new paradigms of the application of force. The Western world is today engaged in an

international struggle against fundamentalist forces and requires the ability to engage the adversary globally. Air power's characteristics of concentration of force, reach and adequacy of payload can be very cleverly adapted to meet this requirement. Air power was able to deliver a significant weight of attack over a long distance in the 2001 Afghanistan campaign. Air power was able to concentrate the necessary fire power at the time and place of choice without any constraints while operating from air bases in the Continental US and Diego Garcia. Further, the precision capabilities of the weapons made every strike extremely accurate, leading to minimal wastage of effort.

The 2001 Afghanistan campaign very clearly demonstrated the effectiveness of precision air strikes directed by Special Forces—a new way to carry the fight to the enemy at the tactical level—creating an innovative combination for the joint application of force.[30] These ground-aided precision strikes were developed out of the necessity to engage adversaries who provide only fleeting windows of opportunity in terrain that did not permit the rapid manoeuvres of the surface forces. While this was an unconventional way to engage the adversary, the flexibility of air power and its responsiveness was clearly evident in this campaign.

Flexibility and innovativeness are inherent characteristics of air power and as such are enshrined in its basic doctrine. However, the flexibility of air power is best used in times of absolute need, when the unexpected happens. This may indeed have been the case in 2001, but the success of air power in providing the necessary strike power in very exacting circumstances has now been taken for granted. That air power will provide the required calibre of strike is not questioned and the fact that air power resources are extremely stretched to meet all the demands is quietly forgotten. This can only

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30   David Jeffcoat, *Air Power and Special Forces: A Symbiotic Relationship*, Paper No 14, Air Power Development Centre, Canberra, February 2004, p. 3.

mean that, at some point in the not too distant future, air power will fail to deliver to the required degree and tempo, leading to strategically difficult situations. It is to avoid such a catastrophic turn of events that doctrinal revisions are now required.

The basic delivery of air power—the what and how—has not changed. However, the guidelines within which air power operates have become highly enlarged; it is becoming more difficult to obtain basing rights and over-flight rights from sovereign nations, increasing mission times to the extremes of human endurance; forces structured for conventional conflicts to defend their national territory do not have the strategic depth to retain the flexibility to operate in the conventional and unconventional modes; and more than any other force projection capability it is air power that is being called upon to face the brunt of global strategic engagement. The tempo of operations in the recent past has been very high and that may be partly the reason for almost no doctrinal thinking taking place and no suggestions of changes coming to light. However, it is of great importance for all air forces of calibre to take note that the type of operations that they are involved in will stay the same for a long time, that governments will continue to demand the impossible—almost always delivered at great cost—from them, that the necessary 'peacetime' break to eventually study the conflicts and distil doctrinal lessons may not be forthcoming in the near future and that it is incumbent on them to be able to develop and adopt nuanced doctrine while continuing to operate at the required tempo.

The Way Forward

Although air power capabilities were constantly improving from the 1950s, it was only in the last two decades that it came to be clearly recognised as a war-winning capability rather than as a contributory one. In the larger analysis this might seem a bit short-sighted, especially in view of the fact that control of the air had been accepted

as an absolute prerequisite for the success of all operations. It is also intriguing that there was only very limited doctrinal development in the realm of air power application for nearly forty years. The reasons for this apparent lacuna are many, but the impact of doctrine not having kept pace with technological developments that enhanced the force projection capabilities of air power was very apparent. This apparent mismatch between doctrine and capability has been the bane of air power.

In the 1990s several noteworthy changes took place both in air power capabilities and in the doctrinal concept of operations. For a period of time, air power capabilities, their tasking and strategic doctrine had parity and therefore, air power produced the most spectacular success of its history. In the 2000s, although capability development has been only incremental and doctrine has been continuously refined, there is still an apparent disparity between capability and what air power delivers. This is a new dimension to an old problem. While the doctrine has kept pace, the demands being placed on air power have enforced the induction of a changed concept of operations. There is very limited doctrinal backing for this new situation and air power has relied on its traditional flexibility to deliver the required effort.

This situation is further exacerbated by the ease with which Western forces assume air superiority in all theatres into which they operate, effectively relegating the crucial fight for control of the air to a virtual requirement. This has permeated to such an extent within the planning and execution of campaigns that any strategist who mentions the need to allow for a contest for the control of the air is thought of as an alarmist. The time may not be far away when a Western force will be required to contest air superiority to the great detriment of the joint campaign. Such a contest need not emanate from the sky because developments in air defence capabilities and missile technology can now effectively undermine and even contest air superiority.

For the past decade Western air forces have operated at the edge of current doctrine, relying heavily on their inherent flexibility to operate, when necessary, outside the bounds of acknowledged doctrine. While this in itself proves the resilience and veracity of the extant doctrine of these forces, prolonged forays into doctrinally unchartered areas could lead to a loss of focus within the force. This will obviously be a long term process, the consequences of which will affect the efficiency of the force, but the onset of which will be difficult to identify in a timely manner. Even if identified sufficiently early, such a situation will need immediate remediation, which might not be an easy task and could lead to an unsustainable downward spiral of the force's broader capabilities. The situation is real and dangerous.

Dynamic and appropriate doctrine has been the bulwark of Western forces for a long time; the primary reason for their excellence and superiority for the past two centuries. The world today is witnessing the coming of age of an adversary who understands very clearly this Western superiority and has formulated well calculated doctrine—religious and military—designed to beat it by taking advantage of the built-in rigidity of a conventional force. Air power is by far the most flexible arm of conventional military power and has repeatedly demonstrated its versatility in the past decade. In the ongoing conflict this may not be good enough to assure unquestioned victory. The future fight will not be the same as the current fight and, therefore, it is critical to achieve doctrinal ascendancy once again.

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CONCLUSION

In the post-Cold War era, it has become almost certain that the chances of a declared state-on-state conventional war taking place between two nation states are almost negligible. Simultaneously, the instances of conflict between different groups—non-state, quasi-state or state-sponsored—between themselves or against states, both within a country and across geographical borders have increased dramatically. Adversaries to the broader security of sovereign states have become diffused and ill-defined, considerably reducing the effectiveness of conventional military forces against them. This is mainly because these adversaries do not have clearly identifiable centres of gravity and normally operate within the civilian population which makes taking lethal action against them extremely difficult and prone to unacceptable collateral damage. At the same time the concept of national security has enlarged way beyond the traditional protection of geographical borders and now even encompasses the safety of the Diaspora of a nation.

Under this anomalous situation, nations have tended to rely on the time honoured 'military solution' to ensure adequate security. However, this can only be a short term response to an ongoing issue and will not provide a conclusive solution. There is a very tangible need for democratic nations to take stock of the changing security environment and the rapidly adapting and clever adversary to formulate a security strategy that will clearly enhance their capability to assure the protection of national interests. This will require the nuanced application of all elements of national power in concert towards protecting and projecting security needs.

Achieving this will require a well formulated national security doctrine from which will flow the more detailed security requirements, capabilities and the interrelationship between the different agencies that lead the primary elements of national

power. There also has to be a clearly laid down division of responsibilities that caters to different contexts that arise in the case of a nation having to project force as a deterrent, a show of force or even for the application of military power. Based on this higher level understanding, the military forces of a nation will be able to formulate a viable doctrine for their optimum employment throughout the spectrum of conflict.

All doctrine is dynamic by nature. Military forces are reliant on well-founded doctrine for the employment of their capabilities within the ambit of national requirements. The changes in doctrine that have been incorporated over the years, particularly after World War II, reflect the rapid changes in power projection capabilities that technology has provided to the military forces. Nowhere else is this more obvious than in the case of air power doctrine. Even within the short history of air power, its doctrine has been very finely refined to articulate the enhanced capabilities that air power brings to bear in pursuing national security objectives—from the provision of humanitarian aid to victims of natural or man-made catastrophes to rapid, proportionate, accurate and decisive application of lethal force globally.

Over the past few decades air power has clearly demonstrated a capability hitherto not available to the leadership of a nation; that it can transcend geographical barriers and carry out appropriate actions to create the desired effects with minimal political fallout. The fact that it has been embraced with alacrity only further proves the point that international diplomatic pressures and casualty aversion have indeed become anathema to the global democratic community at large. The changes in the politico-economic and security environment and great improvements in air power capabilities that have characterised the recent past have combined to ensure that at least for the foreseeable future, the employment

of air power will be considered the first option, if not the optimum solution to emerging security threats.[31]

This has ensured that the employment of air forces in a variety of roles has increased considerably and the smaller air forces of the world are very thinly spread to contain the operational tempo being forced on them. However, strategic doctrine has not developed at the same pace and has not been able to envelop the increased operational employment and the innovative ways in which air power is currently being employed. There is an immediate need to encompass the ongoing evolutionary process of air power employment within the doctrinal ambit to ensure the veracity of emerging concepts in the long term.

The extant doctrine of air power is powerful and has stood its ground under great pressure from different sources. However, the broad threats to national security have to a certain extent forced governments to adopt immediate measures—a 'come as you are' approach—to ensure that emerging threats are defeated as best as possible. This has placed enormous pressures on military forces to flexibly employ their capabilities to achieve the desired outcome. While such short term measures will be successful, mainly because of the inherent resilience of the forces concerned and their very solid doctrinal foundation, it cannot be adopted as an ongoing norm for the employment of military forces. The inherent flexibility, adaptability and versatility of the forces that have ensured the success

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31 It is necessary to add an explanation regarding air power capabilities. In the recent past a noticeable trend has been the unmatched improvements that United States air power has made since early 1990s. The US air power capabilities have forged ahead in such an obvious manner that even its closest allies have not been able to keep pace. The disparity in the capability spectrum is such that it can now very clearly be identified that there are two types of air power – the one that the United States can bring to bear and the capabilities resident in the air forces of the rest of the world. The knock-on effect of this has been that air forces that have wanted to maintain even basic interoperability with the US Air Force have to do so by distancing themselves from most of the others regionally, and at times even from their most enduring allies.

of Western military operations, on open display across the world, can only be stretched at the risk of impending failure. A robust doctrinal development process that can analyse the ongoing developments in employment concepts and technological developments, with the vision to incorporate them into strategic doctrine successfully is the need of the hour. The current international security situation does not permit failure to be an option.

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