

# THE ROYAL CANADIAN AIR FORCE JOURNAL

WINTER 2014 VOL. 3 NO.1



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**AND MUCH MORE!**



PRODUCED BY  
THE CANADIAN FORCES  
AEROSPACE WARFARE CENTRE



National Defence  
Défense nationale

Canada

**THE ROYAL CANADIAN AIR FORCE JOURNAL** is an official publication of the Commander Royal Canadian Air Force (RCAF) and is published quarterly. It is a forum for discussing concepts, issues and ideas that are both crucial and central to aerospace power. The *Journal* is dedicated to disseminating the ideas and opinions of not only RCAF personnel, but also those civilians who have an interest in issues of aerospace power. Articles may cover the scope of air force doctrine, training, leadership, lessons learned and air force operations: past, present or future. Submissions on related subjects such as ethics, technology and air force history are also invited. This *Journal* is therefore dedicated to the expression of mature professional thought on the art and science of air warfare and is central to the intellectual health of the RCAF. It serves as a vehicle for the continuing education and professional development of all ranks and personnel in the RCAF as well as members from other environments, employees of government agencies and academia concerned with air force affairs. ☎

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THE ROYAL CANADIAN  
**AIR FORCE JOURNAL**



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For the **Spring 2015** issue: **30 January 2015**

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# EDITOR'S MESSAGE

**W**elcome to 2014! It promises to be a most interesting and exciting year from a number of different perspectives. Not only will the Royal Canadian Air Force (RCAF) celebrate its 90<sup>th</sup> birthday (and is still looking good for its age), the country as a whole will start to commemorate notable events and achievements related to the world wars and the post-war period. Once the proposed events have been approved, we shall see about putting them into print so that you can plan ahead.

It never ceases to amaze me how much our past seems to influence our future. Often it is not a large change, but I never thought that I would have to relearn how to read “pips and crowns” to know if I was speaking to an Army captain or major. Nor did I ever think that I might have to relearn the old RCAF rank designations (although “squadron leader” does have a nice ring to it). Each and every time something like this transpires, I am reminded of the old Meatloaf (for those of a younger age, you can Google him) song “Objects in the Rear-view Mirror May Appear Closer than They Are.”

As an interesting piece of trivia, I was asked to prepare a quick summary of the old RCAF rank structure and found a bit of information that you can try out ... at your peril. Apparently, at one time, the rank of warrant officer, class I (WO I), now known as chief warrant officer, when translated into French, became *sous-officier breveté, 1<sup>re</sup> classe (SOB I)*. So, if and when we revert back to the old ranks, you can dredge up this historical tidbit and call your chief a “first-class SOB.” I tried it—he was not amused.

There are times when you really have to look at how an acronym plays out in BOTH languages.

Enjoy the read. ☺


Sic Itur Ad Astra



Major William March, CD, MA  
Senior Editor



# A RETURN TO



## THE ROYAL CANADIAN AIR FORCE

## RANKS

### A Historical Examination



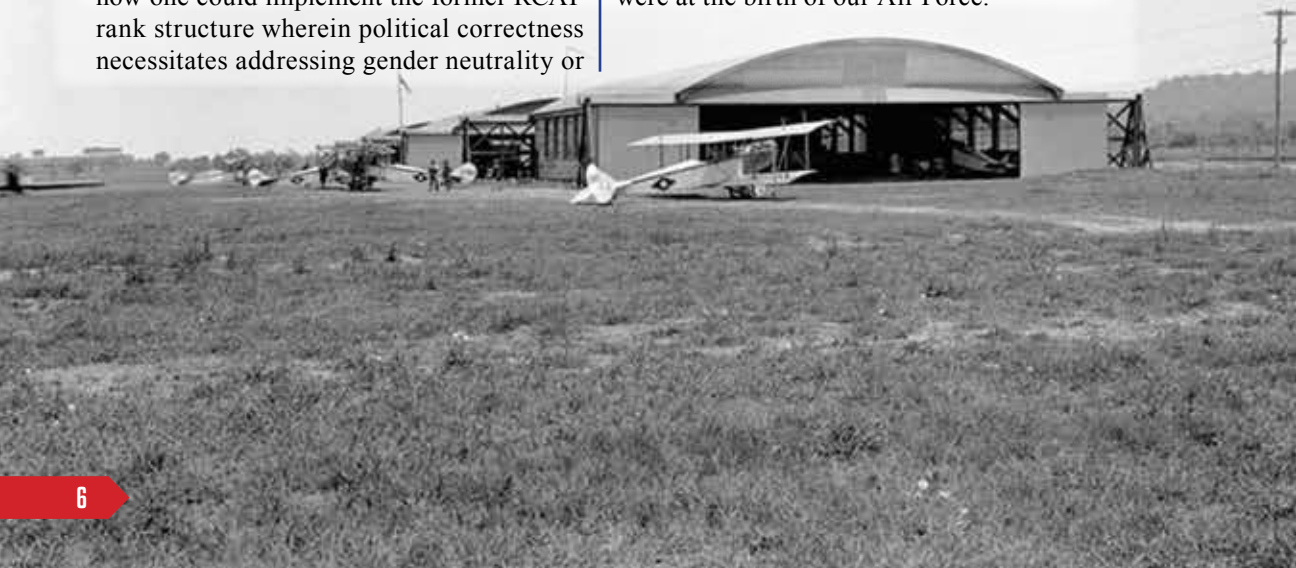
By Lieutenant-Colonel John J. Alexander, GD, MDA





**T**he Government of Canada has recognized the history of the various environments of the Canadian Forces through the re-introduction of the title “Royal” within the Royal Canadian Navy (RCN), the Royal Canadian Air Force (RCAF) and certain line units of the Canadian Army.<sup>1</sup> Other recognitions such as utilizing the executive curl on naval ranks, the use of the Naval Jack and returning to the pips and crowns of the Army have led to some personnel in the RCAF pondering whether a return to traditional RCAF ranks will be forthcoming. Many a lunchroom discussion has centred on how one could implement the former RCAF rank structure wherein political correctness necessitates addressing gender neutrality or

how one would recognize the appointment of master corporal whilst honouring our history and heritage. How can one be a squadron leader and yet not command a squadron? In pondering such questions, it is important to recognize that the history which we choose to recognize was not easily arrived at in the first place. This paper will reflect upon the history of RCAF and Canadian Forces (CF) ranks in order to inform the on-going discussions across our Air Force. As will be seen, many of the same considerations of developing an RCAF esprit de corps, independent of the other environments, are as relevant today as they were at the birth of our Air Force.





## The birth of an air force

Though the RCAF chooses to recognize 1 April 1924 as its formation date, the history of the Canadian Air Force (CAF) extends back further to the establishment of a Canadian wing in Europe which “became operational nine days after the First World War had ended.”<sup>2</sup> Demilitarization post World War I (WWI) was the first challenge of a burgeoning air force. At the time, “middle-ranking civil servants in Ottawa” took up the challenge of “converting the expansive potential of aviation, so clearly demonstrated in war, to constructive peacetime uses.”<sup>3</sup> “[T]he government delegated responsibility for aviation to an autonomous Air Board in the summer of 1919.”<sup>4</sup> This Air Board was primarily concerned with conserving the aviation experiences of WWI through the promotion of civil flying. The military arm of the Air Board, the CAF, was established along militia lines. Colonel Oliver Mowat Biggar, “one those few middle-ranking personnel in Ottawa,” proposed the formation of the Canadian Air Force “as a non-permanent service”<sup>5</sup> in November 1919 to work alongside the civil aviation division under the control of the Air Board. The government accepted the argument for the creation of the Canadian Air Force in February 1920, and Sir Willoughby Gwatkin became the first inspector general of the CAF in April 1920 with Air Commodore A. K. Tylee appointed as air officer commanding. The decision to have this militia arm within the Air Board was not universally accepted and, indeed, almost did not happen.

The question of whether Canada would even have an air force was best summed up by then leader of the opposition, William Lyon Mackenzie King, when he asked in the House, “Where does the Minister expect invasion from? ... defence against whom[?]”<sup>6</sup> The concept of an Air Board was not novel. The United Kingdom had established an Air Board in 1916 and replaced it with an Air Council in 1917. However, unlike Canada’s Air Board, the developments of command and control of air power in the United Kingdom were centred on the military aspects only.<sup>7</sup>

The initial CAF headquarters opened 17 May 1920 at 529 Sussex Street in Ottawa and consisted of six personnel: Wing Commander R. F. Redpath, Flight Lieutenant G. J. Blackmore, Warrant Officer H. H. Atkinson, Flight Sergeant F. Aldridge and Sergeant A. H. McKay.<sup>8</sup> With such a small headquarters, initial CAF regulations were adapted from those of the Royal Air Force (RAF). The CAF chain of command for the first air officer commanding was a relatively direct line through the inspector general to the Air Board.

While the initial cadre of CAF officers and enlisted men were considered “in continuous service but on inactive, unpaid leave except when on refresher training,”<sup>9</sup> their ranks were transferrable from their former RAF or army ranks held during WWI, once they completed their first training period. Hence, both RAF and traditional army ranks were acceptable<sup>10</sup> and used interchangeably at the discretion of the holder. In the earliest days, the choice to use army or RAF ranks seemed to be along civil versus military flying duties. Quite often, members employed the army ranks when flying in support of the civil branch of the Air Board. The same individual would then utilize the air-force rank when flying within the military branch.<sup>11</sup> The rank structure laid down for the CAF included: air vice-marshal, air commodore, group captain, wing commander, squadron leader, flight lieutenant, flying officer, pilot officer, warrant officer, flight sergeant, sergeant, corporal, air mechanic (1<sup>st</sup> class) and air mechanic (2nd class).<sup>12</sup>

As mentioned, the Air Board was comprised of two flying divisions—the civil and the Canadian Air Force—and would remain a dual system until 1922. It was not until the elimination of the dual system that the concurrent usage of army and air-force ranks within the Air Board was resolved. This was eloquently demonstrated in Camp Borden’s routine orders of 28 November 1922, wherein it stated:

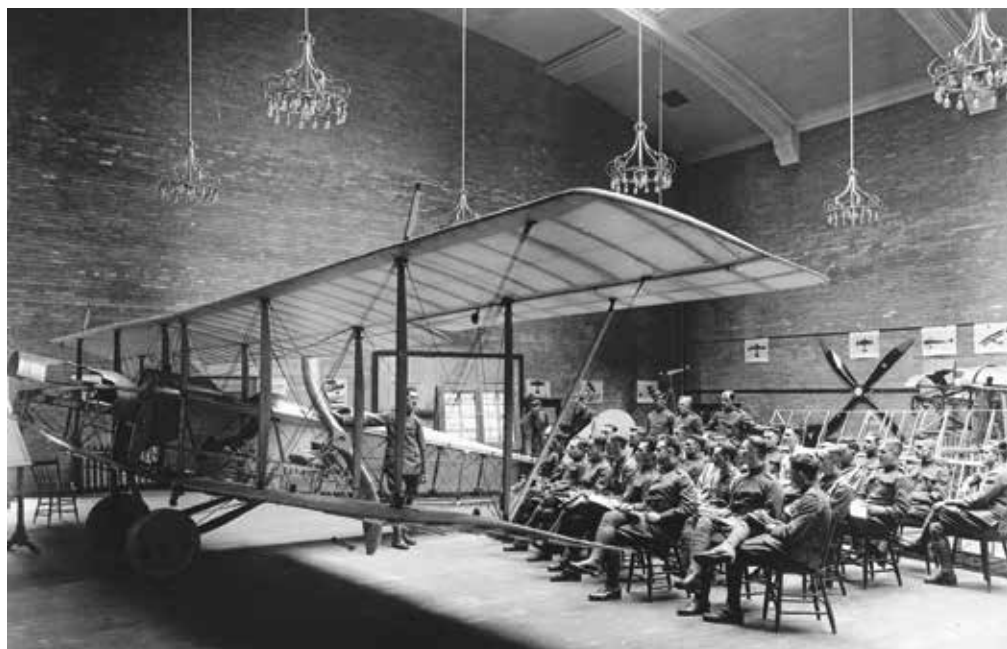
The use of Military Equivalent of Canadian Air Force ranks will be discontinued throughout the Service forthwith and only the ranks hereunder quoted (i.e., group captain to pilot officer) will be used both in correspondence and conversation.<sup>13</sup>

## The Royal Canadian Air Force

On 1 January 1923, the former Air Board (predominantly civilian in nature prior to this point) was consolidated within the CAF under the newly formed Department of National Defence, under the control of the chief of the general staff. Although discussion of seeking the “Royal” designation had preceded the amalgamation of 1 January 1923, application for said designation was not made to the Secretary of State for External Affairs until 5 January 1923. Formal reply from the Secretary of State for the Colonies in England was received on 15 February 1923. Weekly Order No. 21/23 on 12 March 1923 promulgated the new title “Royal Canadian Air Force.”<sup>14</sup> Although the promulgation of “Royal” within the title was conferred in 1923, it was not formally adopted until 1 April 1924.

Prior to the official designation of the Royal Canadian Air Force, uniforms were loosely styled on the army dress, with army-style rank badges (pips and crowns).<sup>15</sup> Afterwards, it was decided to adopt the dress and motto of the RAF, and the uniform was patterned on the RAF uniform of the day. These changes would remain extant until unification on 1 February 1968. As an aside, the translation of Royal Canadian Air Force to French was not resolved until June 1940, thereafter referred to as *Corps d’aviation royal canadien*, abbreviated as CARC.<sup>16</sup> The date 1 April 1924, which we now celebrate as the “official” birthdate of the RCAF, was significant in that the new King’s Regulations and Orders (KR&O) for the RCAF were now completed after two years of staff work and came into effect on this date. It also marked the commencement of the new fiscal year, after which the new pay and allowances could be administered.<sup>17</sup> It also marked the date after which the use of the “Royal” designation was now approved by KR&O. As demonstrated, however, the true date for the birth of Canada’s Air Force could have been much earlier.

With the adoption of the KR&O for the RCAF, largely based on the RAF and the



United Kingdom Force Act, the enlisted ranks were adjusted to the following: warrant officer 1<sup>st</sup> class (WO1), warrant officer 2<sup>nd</sup> class (WO2), flight sergeant (FS), corporal (Cpl), leading aircraftman (LAC), aircraftman 1<sup>st</sup> class (AC1) and aircraftman 2<sup>nd</sup> class (AC2). No significant changes were made to officer ranks with the exception of adding air marshal and air chief marshal. The RAF had arrived at this rank structure as a means of severing the Air Force from the other services. The intent was “to preserve and emphasise the principle of the independence and integrity of the Royal Air Force as a separate service among fighting services to the Crown” while recognizing the requirement for the Air Force to serve the special needs of the both the Army and the Navy “in addition [to having] a strategic and tactical sphere of action independent of the other two fighting services.”<sup>18</sup> Just as Canada’s burgeoning Air Force was seeking its independence, so too, the RAF was seeking to establish itself as a credible and independent force separate from the Army and the Royal Navy.<sup>19</sup> Canada automatically adopted the RAF ranks for use in the RCAF when it based the RCAF KR&O upon the RAF KR&O and the United Kingdom Force Act. These ranks

would remain in effect in the RCAF until unification many years later in 1968. During World War II, gender-specific language would be included in the rank titles, such as aircraftman/aircraftwoman, to address the inclusion of women in uniform. Concurrent with the maturing of the RCAF, questions were already beginning to arise about dedicated air support to the Navy.

Even before unification in 1968, the use of the RAF rank structure within the RCAF was not without some controversy. In a memorandum to the RCAF Senior Advisory Group in February 1965, the author (Deputy Chief of Personnel)<sup>20</sup> suggests that the titles, “in many instances, originated with the Royal Naval Air Service and later were adopted by the Royal Flying Corps, which in turn became the RAF in 1918.”<sup>21</sup> Principal among the arguments was that the ranks in use by the RCAF were no longer indicative of the officer’s function as it was 40 years previously when the ranks were created. Other arguments included the lack of one-word ranks, thus leading to confusion among the public. RCAF ranks also did not easily translate into French whereas the Canadian Army ranks did. Lastly, in 1965 it was





considered advantageous to adopt the Canadian Army rank structure as it was similar to the rank structures used by the other members of the United Nations and the North Atlantic Treaty Organization with whom the RCAF could be expected work alongside on operations. The recommendation of this report was to retain the rank insignia but adopt the Canadian Army rank titles as this result would be “the best of both choices.”<sup>22</sup>

Prior to unification in 1968, the Canadian Army and the RCN had developed aviation and air arms of their own, which did not belong to the RCAF. Based on this, questions arise today among the tactical aviation and maritime aviation communities as to whether it would even be appropriate to return to RCAF ranks. The question is a little more complicated in that those aviation arms, as will be demonstrated, had closer links to the RCAF than many of today’s aviators realize.

## The development of naval and Army aviation capabilities

In Canada, the division of aviation in direct support to the Navy evolved gradually.

On 5 September 1918, the Royal Canadian Naval Air Service was established by Order in Council, only to be disbanded three months later following armistice.<sup>23</sup> This creation reflected the significant contributions of Canada’s airmen flying in the Royal Flying Corps and the Royal Navy Air Service throughout WWI. However, as Canada had no ships capable of launching and recovering aircraft after WWI, the RCN Naval Air Service had little chance of survival. Slow development continued in shore-based support to the RCN such that by 15 September 1938, Eastern Command was established to monitor the territorial waters off Canada’s coast.<sup>24</sup> This is not to suggest that aviation in support of the Navy did not exist prior to 1938. In fact, RCAF Station Dartmouth had, at this point, existed for almost two decades, as did RCAF Station Vancouver—seaplanes flew from both locations. Maritime Group was subsequently formed in April 1949 and, finally, Maritime Air Command in January 1951. “Maritime Air Command was absorbed into the Canadian Forces Maritime Command in January 1966 ...”<sup>25</sup>

The post-war years also saw the emergence within Army circles of a sincere interest



CF Photo

in aviation. RCAF acquisition plans for new transport planes evolved in close consultation with the Army (the Army fearing RCAF requirements might not appropriately address their requirements).<sup>26</sup> Similar to the RCN's emergence of a full aviation capacity, the Army developed aviation capabilities such as air observation post throughout the period 1946 to 1975, culminating in the formation of 10 Tactical Air Group in September 1968. 10 Tactical Air Group included two CF-5 fighter squadrons, T-33 reconnaissance aircraft, Buffalo tactical transport and a variety of helicopters for transport and observation/reconnaissance. In September 1975, the Canadian Armed Forces "retreated slightly from unification ... upon the establishment of Air Command." It would become "the focal point of tradition and professional expertise for airmen of the Canadian forces."<sup>27</sup>

## Unification

The process of unification, which culminated in February 1968, had actually begun in 1964 in an effort to eliminate duplication in recruiting, training and other aspects of military support, such as a unified pay system.<sup>28</sup> This single command structure under the Chief of the Defence Staff made perfect sense. Unification resulted in the abolition of distinctive uniforms in favour of the "Jolly Green Jumpers"<sup>29</sup> and the elimination of RCAF ranks, among many other changes. Whereas the Navy vehemently fought the aspects of unification that would threaten their history and heritage, it is suggested that many in the senior ranks of the RCAF silently retired without fuss or learned to accept the changes without dissent.<sup>30</sup> Even this interpretation that the RCAF senior ranks retired silently without fuss is not



universally held. Lieutenant-General William Carr (Retired), the first commander of Air Command in 1975, was an air commodore in 1968 at the time of unification. He holds no recollection of any senior officer retiring as a result of unification.<sup>31</sup> The memorandum of 1965 to the RCAF Senior Advisory Group substantiates his recollections. It appears, from at least this one source, that the RCAF was in favour of adopting Army ranks, and it was approved by the Air Council just prior to unification in 1968.

**The RCAF version 2.0**

This brief historical visit of the evolution of the RCAF leads to the current discussion. The latest amendment to the National Defence Act (NDA), dated 19 June 2013, retains the provision for the re-establishment of an RCAF rank structure.<sup>32</sup> Notably, master corporal is not represented on the chart under any of the three environments. However, as master corporal is an appointment, it is not considered a “rank” by definition of the NDA. The ranks are provided in Table 1.

| Unification Ranks<br>(Column I) | RCAF Ranks<br>(Column IV) |                                    |
|---------------------------------|---------------------------|------------------------------------|
|                                 | English                   | French                             |
| General                         | Air Chief Marshal         | Maréchal en chef de l’Air          |
| Lieutenant-General              | Air Marshal               | Maréchal de l’Air                  |
| Major-General                   | Air Vice-Marshal          | Vice-maréchal de l’Air             |
| Brigadier-General               | Air Commodore             | Commodore de l’Air                 |
| Colonel                         | Group Captain             | Colonel d’aviation                 |
| Lieutenant-Colonel              | Wing Commander            | Lieutenant-colonel d’aviation      |
| Major                           | Squadron Leader           | Commandant d’aviation              |
| Captain                         | Flight Lieutenant         | Capitaine d’aviation               |
| Lieutenant                      | Flying Officer            | Lieutenant d’aviation              |
| Second Lieutenant               | Pilot Officer             | Sous-lieutenant d’aviation         |
| Officer Cadet                   | Officer Cadet             | Élève-officier                     |
| Chief Warrant Officer           | Warrant Officer Class 1   | Adjudant de 1 <sup>re</sup> classe |
| Master Warrant Officer          | Warrant Officer Class 2   | Adjudant de 2 <sup>e</sup> classe  |
| Warrant Officer                 | Flight Sergeant           | Sergent de section                 |
| Sergeant                        | Sergeant                  | Sergent                            |
| Corporal                        | Corporal                  | Caporal                            |
| Private                         | Aircraftman               | Aviateur                           |

Table 1. Schedule to Section 21 of the NDA





Section 21(2) of the National Defence Act currently permits for the usage of other rank designations. All that is required is a change in regulation by Governor in Council “prescribing the circumstances in which a person holding a rank set out in Column I of the schedule shall use, or be referred to by, a designation of rank set out in Column II, III or IV of the schedule opposite the rank held by that person.”<sup>33</sup>

At the outset, the question was posed, how can one be a squadron leader and not command a squadron? This question does not seem to bother our own RCN wherein a lieutenant-commander is referred to as *capitaine de corvette* in French, even though we no longer have corvettes in the fleet. Furthermore, this question does not raise similar questions with our allies such as the RAF and Royal Australian Air Force (RAAF). Anecdotal discussions with officers in the RAF indicate that the present view taken is that a squadron leader is a leader *within* the squadron—not the leader *of* the squadron. The officer commanding a squadron in both the RAF and RAAF is traditionally of the rank of wing commander. Although these ranks originally described the functional responsibilities held by the individual, this is virtually no longer the case in any Commonwealth country employing the RAF-like ranks. Like the aforementioned question of squadron leaders not commanding squadrons, the matter of gender neutrality in ranks does not raise concern with our allies either. However, were it to remain a concern in the Canadian context, the historical employment of RCAF ranks between World War II and 1968 demonstrates the practice of gender-specific ranks. For example, an aircraftman (AC1) was referred to as aircraftwoman (AW1) as was a leading aircraftman (LAC) referred to as leading aircraftwoman (LAW). Conceivably, these gender-specific ranks could be used again; however, it would require a change in the National Defence Act to once again recognize aircraftwoman.

## Conclusion

This paper opens for consideration some of the history behind our rank structure which

honours those who have come before us and serves to foster a sense of pride and esprit de corps in our service now and in the future. The evolution of the RCAF occurred over many decades and not without a certain amount of conflicting opinions on how it should be structured. Therefore, it would seem fitting from a historical perspective that any discussion around a return to a unique rank structure should contain some differences of opinion. The RAF’s consideration to the contributory nature of both the navy and the army cultures in formulating their rank structure demonstrates the inclusive nature and dynamics of both these environments to how the RAF arrived at their structure. Presumably by extension, the RCAF’s rank structure represents a reasonable compromise of all parties. Whatever evolutionary step the current RCAF takes next, it should be clear that there is no one single solution which, based on our history, is the “right way” to recognize our past. 🇨🇦

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Lieutenant-Colonel (LCol) John Alexander, CD, has served in the Canadian Forces in excess of 23 years and holds a Bachelor of Arts in History from Western University and a Master of Defence Studies from the Royal Military College of Canada. A tactical aviation and special operations pilot, he most recently commanded 427 Special Operations Aviation Squadron in Petawawa, Ontario. LCol Alexander now serves as Director Structure Integration 7 at National Defence Headquarters in Ottawa, Ontario.

## Abbreviations

|                 |                              |
|-----------------|------------------------------|
| <b>CAF</b>      | Canadian Air Force           |
| <b>DCP</b>      | Deputy Chief of Personnel    |
| <b>KR&amp;O</b> | Kings Regulations and Orders |
| <b>NDA</b>      | National Defence Act         |
| <b>RAAF</b>     | Royal Australian Air Force   |
| <b>RAF</b>      | Royal Air Force              |
| <b>RCAF</b>     | Royal Canadian Air Force     |
| <b>RCN</b>      | Royal Canadian Navy          |
| <b>WWI</b>      | World War I                  |

## Notes

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By Wing Commander David Glasson, Royal Australian Air Force

# "BIG WAR" AIR POWER

## FOR "SMALL WAR" OPERATIONS





*Editor's note: The views expressed in this work are those of the author and do not necessarily reflect the official policy or position of the Department of Defence, the Royal Australian Air Force, the Government of Australia or any other authority referred to in the text. The Commonwealth of Australia will not be legally responsible in contract, tort or otherwise for any statements made in this document.*

Introduction

An air force's first duty is the defence of the nation from foreign aggression, but in today's global environment this high-level state-versus-state conflict seems a remote possibility. In contrast, the past 60 years have seen air forces predominantly fighting smaller, more unconventional wars. In order to ensure the right balance of air force structure, it is essential to understand the most likely scenarios for the employment of air power. In many situations, these less conventional

operations have progressed from an initial conventional big-war phase, such as involving removal of the established regime, to a longer period of unconventional warfare including counter-insurgency (COIN) operations. This issue affects not only the type of aircraft and weapons platforms used but also how they are employed.

The nature of irregular warfare is that no situation or opponent is likely to be the same. Certainly, there are shared experiences and

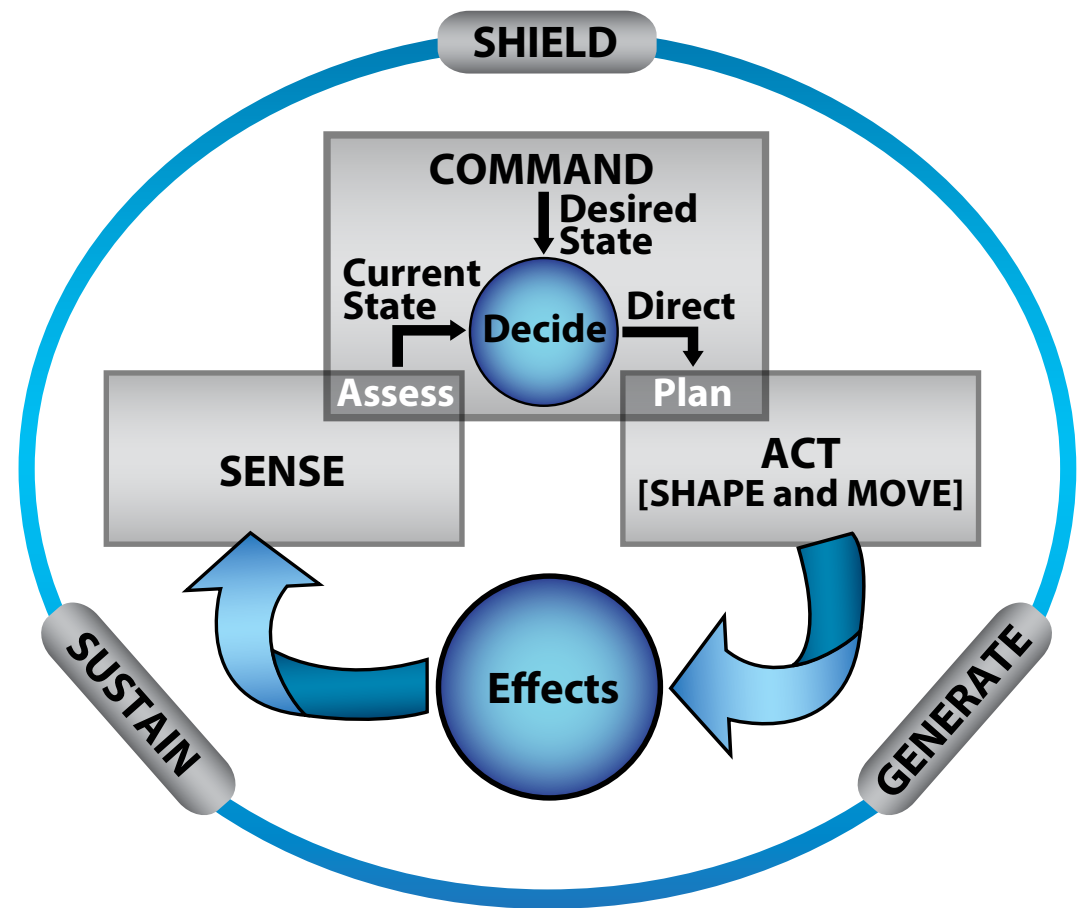


Figure 1. Royal Canadian Air Force functions<sup>7</sup>

lessons, but it is essential that air forces are not geared to fight the last war. Accordingly, it is posited that air forces should maintain a foundation based on conventional air power but be adaptable to meet the challenges of irregular warfare.

### Conventional air power doctrine

During the cold-war era, Canada geared its air power to fight the big-war threat posed by the Soviet Bloc. The period since the end of the cold war saw a significant reduction in the size of the Canadian Forces with more emphasis on joint interaction.<sup>1</sup> This time has, however, seen numerous operations in support of smaller conflicts, yet air power doctrine has continued to focus on the primary aim of protecting a nation's citizens and primary interests.<sup>2</sup> Doctrine determines the method of command and control, the force structure and the concept of operations. Aerospace doctrine also determines the types of weapon platforms and, in particular, the aircraft types to be acquired and how they will be employed.

The Royal Canadian Air Force (RCAF) defines three core functions of air power: Command, Act and Sense. These core functions are displayed with the surrounding enabling functions in Figure 1. Command incorporates the term command and control, encompassing systems, procedures and structures in order for the commander to direct their authority.<sup>3</sup> Conventional command practices have a foundation in the hierarchical structure of the continental staff system.<sup>4</sup> The Sense function includes collecting and processing data, which in the conventional meaning is aimed at a strategic level of the "situational awareness of the land, air and maritime approaches."<sup>5</sup> The Act function includes the operations that involve manoeuvre, firepower and information gathering and is divided into the two subfunctions of Shape and Move.<sup>6</sup> The Shape subfunction, control of the air, is a cornerstone of conventional warfare. It includes the support of land and sea forces through close air support, interdiction and

strike capabilities. Move deals with air mobility and personnel recovery. Both of these areas are formed and structured for conventional war scenarios.

Canada has specific requirements to maintain essential conventional air power functions in order to fulfil the obligations of the contribution to the North American Aerospace Defence Command, the North Atlantic Treaty Organization (NATO) and its unique role in the protection of the Arctic.<sup>8</sup> Canada must, therefore, maintain a fundamental capability of conventional air power functions to meet these obligations. It is essential that Canada maintain its conventional edge which has been the key to past successes and will continue to be necessary in the future.<sup>9</sup>

### Defining small war operations

The NATO Joint Air Power Competence Centre describes three operational themes of future warfare: big war, long war and contained war. Big war is classed as a conventional state-versus-state confrontation. Long war is defined as "countering irregular activity," while contained war is limited to "*inter alia* denial, blockade, and no-fly zones."<sup>10</sup> Small-war operations can be classed as a combination of the second and third themes—countering irregular activity and the limited operation of a contained war.

Irregular warfare is nothing new; it has been documented from rebellions in ancient times through to its prevalence in modern-day conflicts. Throughout this period, the methods of fighting have been broad, including guerrilla warfare, insurgency and terrorism.<sup>11</sup> Adapting air power to meet this range of possible scenarios is a difficult undertaking, as there is unlikely to be a one-size-fits-all approach.<sup>12</sup> This leads to the conclusion that air forces need to determine a foundation for their air power doctrine and then maintain the ability to adapt that capability to meet the challenges of the specific irregular war situation. Steven Metz

argues that COIN operations need to be undertaken less as a belligerent nation but more as a “neutral mediator and peacemaker” and goes on to argue that the best option is to reduce the “human suffering that is associated with the violence.”<sup>13</sup> Air power can play a significant role in this regard and should be part of a comprehensive approach to irregular warfare.<sup>14</sup> This further implies that it is unfeasible to design an air force around one specific small-war possibility. Air forces should, therefore, determine the best way to adapt air power for small wars and remain flexible to meet the changing operational requirements.

### Air power in contained war operations

Contained war can be an effective means of providing assistance to the local population, either against insurgencies or against ruling governments. The recent NATO assistance to insurgent forces in Libya was an

outstanding example of the use of air power in a contained war. The establishment of a no-fly zone removed the Libyan government’s ability to use air power against its own people and essentially “levelled the playing field” for the rebels.<sup>15</sup> Special operations airlift forces were able to retrieve Western personnel from harm’s way. These operations were a clear message of support to the insurgents and against the established regime. In contrast, the blockade and no-fly zones over Iraq against the Saddam Hussein administration were less effective in enforcing the United Nation’s mandate on Iraq. Both of these examples, however, demonstrate the successful use of more conventional air power with its specific weaponry, in a smaller war operation.<sup>16</sup>

### Air power in COIN operations

Air power often provides an essential asymmetric advantage over irregular forces and ensures a high level of speed,



CF Photo: Cpl Mathieu St-Amour

GLB-12 laser-guided bomb on CF18



CF Photo: Cpl Mathieu St-Amour



MQ-9 Reaper UAV



flexibility and reach.<sup>17</sup> Conventional forces find it difficult to adapt to counter insurgent tactics and need to tailor their actions to meet the specific threat and environment they face. The conventional success of the Iraq “shock and awe” campaign was followed by years of COIN operations and nation building. The Afghan campaign showed that more effective results could be achieved by “lighter, mobile ground forces supported by precision air power.”<sup>18</sup> Dubbed the Afghan model, small numbers of special forces operate integrally with air power and local troops.<sup>19</sup> This leads to the use of more network-enabled operations (NEO) where smaller units are able to react swiftly and with a greater amount of local knowledge. To support these operations, air power has the ability to perform these functions through “centralized control and decentralized execution.”<sup>20</sup> This allows for the effective and efficient allocating of limited and costly air resources. Air power can provide a range of capabilities to counter the insurgent forces including air strike, information operations and air mobility.

### Air strike

In conventional thinking, air power provides the ability to “strike at an adversary’s ... center of gravity” using precision kinetic activity.<sup>21</sup> Generally, irregular forces are more dispersed and do not present the same centre-of-gravity targets as conventional forces. A precise strike capability, however, provides many advantages in small wars, such as the ability to destroy centres of operations, deny safe havens and ensure the continual dispersal of insurgent forces. In addition to this strategic role of precision strike, close air support provides an essential tactical role. This includes a range of options to rapidly respond to the needs of ground forces with precision engagement to physically destroy the insurgent forces. Conventional strike/fighter jets are able to loiter over the battlefield and be called onto targets with accurate methods such as laser designation.<sup>22</sup>

One of the arguments against the use of conventional fast jet aircraft is that they usually deploy from rear-echelon, safe, support bases, some distance from the

forward area. This requires aircraft to be pre-deployed ahead of planned ground operations or extends the lead time to respond to the requests of ground forces.<sup>23</sup> An alternative to conventional aircraft would be using smaller aircraft that are custom designed for COIN operations. Smaller, customized, manned aircraft (like the Skyraider used in Vietnam) provide a specialized alternative but are vulnerable to small arms and man-portable air-defence systems. Unmanned aerial vehicles (UAVs) have adapted well to this role by being able to be forward deployed, being responsive to ground forces and delivering precise munitions, even if of a lower calibre than larger manned aircraft.<sup>24</sup> UAVs have proven an effective addition to the air power regime in big wars such as DESERT STORM and likewise in small wars such as in Kosovo. Conventional aircraft are still able to provide the “big hitting” power that may be needed to support planned operations.

The air strike capability can present a number of issues in the small-war environment. The prime objective of current United States and coalition forces in recent Middle East operations has been the protection of the local population.<sup>25</sup> Air strike can “tend to aggravate an insurgency situation”<sup>26</sup> by producing collateral damage or simply by causing fear in the civilian populace. It is, therefore, essential to make sound and considered judgements relating to targeting, using the most accurate and timely information possible.

### Information operations

Accurate and timely information is critical to effectively counter insurgent forces. The RCAF Sense function includes a number of information operations such as intelligence, surveillance, targeting acquisition and reconnaissance (ISTAR) as well as airborne command and control. Airborne assets are able to collect and disseminate

CP140 Aurora & 2 CF18 Hornets



Photo: Antoine Letarte, CC BY 3.0  
[http://fr.wikipedia.org/wiki/Portail:Forces\\_canadiennes/Image/47](http://fr.wikipedia.org/wiki/Portail:Forces_canadiennes/Image/47)



Heron UAV

CF Photo: Cpl Andrew Saunders

a range of information, including signals, communications as well as fixed and moving target imagery.<sup>27</sup> This information can then be rapidly disseminated to commanders or direct to ground forces, enabling network-enabled operation. These air-power assets are most efficiently controlled through a centralized command to minimize duplication and ensure the appropriate level of joint force priority of limited resources.<sup>28</sup>

Irregular forces are often widely dispersed and integrated into the general civilian community. Air power has proven critical in being able to locate, identify and track insurgents and their leaders.<sup>29</sup> Surveillance can be conducted around the clock on compounds, routes and suspected locations. Current airborne technological equipment can track back from an improvised explosive device to locate the bomb-making facility or trace the launch point of rocket or mortar attacks.<sup>30</sup>

In Afghanistan, these functions have been provided by both conventional and purpose-built platforms. Conventional ISTAR platforms (such as E-3D Sentry, Sentinel R1, Nimrod R1 and RAPTOR-equipped Tornado GR4s) have been deployed against irregular opponents in both Iraq and Afghanistan with positive results.<sup>31</sup> These conventional platforms are often adapted to suit the specific requirements of COIN operations. For example, the RCAF CP140 Aurora and the Royal Australian Air Force P3-C Orion were procured primarily as maritime surveillance and antisubmarine platforms. In addition to conducting a maritime role against irregular sea forces, however, these platforms have been modified to conduct ground ISTAR operations in Afghanistan, providing imagery and myriad other surveillance techniques.<sup>32</sup> Other conventional aircraft that have been designed for explicit purposes (such as the B-1 and B-52 bombers plus fast jet fighters) and are



E-3D Sentry



Photo: Adrian Pingstone

not normally considered traditional ISTAR platforms have demonstrated a “significant ability to gather intelligence.”<sup>33</sup>

UAVs have proven to be extremely successful in the ISTAR role. The Canadian Forces identified the requirement for unmanned vehicles in this role and responded by procuring the Heron UAV at “record speed.”<sup>34</sup> This demonstrates the importance of an air force being able to adapt to meet the changing needs of technology and the strategic environment.

### Air mobility

Air power provides an important function in providing air mobility in small wars. General Norton Schwartz argues that air mobility is “air power’s greatest contribution in counter insurgency” and that it plays a pivotal role in the COIN effort.<sup>35</sup> This is due to the ability to transport high volumes of

troops and materiel over a long distance in a very short time period. Air mobility provides the ability for a force to manoeuvre as defined in the Move subfunction of the RCAF’s Act function. Air mobility also provides the supporting function of Sustain.

Air mobility provides the essential reach that armed forces need to operate in a foreign country. COIN forces are often deployed to remote locations, and air mobility is essential for infiltration, exfiltration and ongoing logistical support. In addition to this physical support, airlift provides important support for morale. This has an extremely positive effect of reducing the COIN forces’ sense of isolation and provides them the confidence that they will be “reinforced, supplied and evacuated when needed.”<sup>36</sup>

One of the advantages of air mobility in COIN operations is that it can overcome the



problems faced by ground transport. Intra-theatre lines of communication are often over difficult terrain and involve poor local ground transportation networks. Furthermore, ground transport convoys are highly attractive and vulnerable targets for insurgents.<sup>37</sup> Air mobility offers the essential tool to overcome these obstacles and provides the critical manoeuvre element. In Afghanistan, road convoys are particularly vulnerable to Taliban attack through the use of suicide bombers, mines and improvised explosive devices, prompting Lieutenant-Colonel Ian Hope, former commander of Task Force Orion, to state: “That has produced a risk that would be reduced if we could take helicopter flights.”<sup>38</sup> Following recommendations of the Manley Report, the RCAF purchased an initial six CH147D Chinooks from the United States and began a long process to improve its heavy-lift helicopter fleet.<sup>39</sup>

In addition to supporting COIN forces, air mobility can provide a high level of psychological influence on the civilian population by supporting the incumbent

government and by providing humanitarian and medical assistance. This role of nation building is immediately visible and improves the quality of life for the general population.<sup>40</sup>

Air mobility is also a joint enabling force, allowing the option for smaller ground units to conduct operations over a wider, more dispersed area.<sup>41</sup> This has proven to have a successful force multiplier effect in numerous COIN situations. In countering the irregular forces in Algeria, the French used air mobility to avoid larger concentrations of force and opted for smaller dispersed units with lower levels of command.<sup>42</sup> This strategy of using air mobility as a force multiplier has also been used successfully by the British in Kenya, Malaya and Oman.<sup>43</sup>

In conducting this range of operations, the air force can rely on its general airlift capabilities with only minor adjustments to the method of employment, doctrine and training.<sup>44</sup> At the tactical level, conventional and unconventional warfare can be essentially the same, yet planners and operators need

to amend their tactics to suit the specific threat environment. This may require random scheduling as well as changes to routing and flight profiles, as the intelligence regarding insurgents' weaponry and areas of operation are updated.

COIN intra-theatre air mobility would, however, require a different balance of the type of aircraft used, in contrast to state-versus-state warfare. A smaller proportion of heavy airlift would be needed, with a greater reliance on smaller, quick-response missions and, therefore, suitably capable aircraft to meet those objectives.<sup>45</sup>

## Adapting conventional air power for small wars

While maintaining a foundation of doctrine, structure, tactics and aircraft based on the concepts of conventional warfare, an air force needs to be able to adapt to meet the specialized demands of the small-war environment. Robert Owen remonstrates that an air force should be capable of adapting to different types of war instead of focusing on one particular type of warfare.<sup>46</sup> This follows from the principle that COIN air operations, while having certain specific requirements, do not differ drastically from conventional air operations. The British Chief of the Air Staff, Air Chief Marshal Sir Stephen Dalton, argues that the "Afghan model may not fit future scenarios" and that air power should maintain the flexibility to act "against technically and militarily proficient adversaries" in future operations.<sup>47</sup>

To be able to adapt to a small-war environment, an air force should maintain a centre of expertise in COIN warfare and ensure the ongoing development and education in small-war concepts.<sup>48</sup> It is also essential to continue to develop joint doctrine on the use of air power and have aviation specialists integrally involved in the joint-planning and decision-making

processes.<sup>49</sup> Procurement processes should also be streamlined to ensure specialized aircraft can be acquired to meet the threat environment. The C-17 and Heron projects are prime examples of how this can be achieved.<sup>50</sup>

## Conclusion

Although small wars share certain similar characteristics, no two will encounter the same strategic environment or tactical scenarios. An air force should not, therefore, be structured to fight the last war. The first priority of a nation's defence force is to defend the homeland and its national interests, and Canada has a number of obligations that require the maintenance of conventional air forces. Air power should, therefore, have a foundation of doctrine, structure and aircraft types based on conventional war fighting. Due to the nature of warfare and the ever-changing global situation, this foundation would be geared to respond to new challenges and adapt its capabilities accordingly.

Air power provides an essential asymmetric advantage in COIN operations, particularly in the elements of air strike, information operations and air mobility. Conventional air strike capabilities have proven adaptable to the requirements of COIN warfare with an understanding of the need for accurate information and precision targeting. Canada has adapted quickly to adopt the use of UAVs in this role. Conventional aircraft have also proven efficient in information operations with modifications to technology and operating tactics. Air mobility has proven to be a pivotal function in small wars, yet the operations are essentially the same in conventional and unconventional warfare. Once again, adapting to the operating environment is the key to successful air power. It is, therefore, fundamental that air forces should maintain a foundation based on conventional air power yet be adaptable to meet the challenges of irregular warfare. 🇨🇦



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## Abbreviations

|              |   |
|--------------|---|
| <b>COIN</b>  | counter-insurgency  |
| <b>DND</b>   | Department of National Defence                                    |
| <b>ISTAR</b> | intelligence, surveillance, target acquisition and reconnaissance |
| <b>JAPCC</b> | Joint Air Power Competence Centre                                 |
| <b>NATO</b>  | North Atlantic Treaty Organization                                |
| <b>RCAF</b>  | Royal Canadian Air Force  |
| <b>UAV</b>   | unmanned aerial vehicle   |

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# IN PRAISE OF BOMBER HARRIS AND AREA BOMBING





*Editor's note: This article was provided as part of a letter to the editor (Royal Canadian Air Force Journal, Vol 2, No. 4) written in response to "Unshakeable Faith: The Flawed Command of Bomber Harris" by Major Lynne Chaloux (Royal Canadian Air Force Journal, Vol 2, No. 2). Much of the material contained in this article was taken from the author's book, None But the Brave, published in 2009.*

## INTRODUCTION

While few of even his most ardent critics would judge Sir Arthur Travers Harris, the longest-serving wartime commander of Royal Air Force (RAF) Bomber Command, as anything less than an outstanding war leader, this does not mean that his leadership was flawless or that it did not generate considerable controversy. However, those flaws need to be placed in perspective and measured against the wartime gains to Allied victory that were generated by the strategic courses of action he followed with such dogged determination. To that end, this article will attempt to address the majority of the controversial elements associated with his leadership, with overall emphasis upon the success/failure of the strategic area bombing campaign.

## AND NOW, TO WAR

For much of the war, the bomber offensive constituted for Britain and the Dominions the only viable form of offensive action against a thoroughly evil, repressive regime. Lacking a

strong continental army, loath to revisit the abattoir of massive armies stalemated in bloody confrontation that had characterized the Western Front during the First World War, and realizing that a naval blockade of Germany was impossible in this war (due to the strength of the German navy), the bomber offensive became the only viable means of striking back. It provided a massive diversion to the Soviet allies at a time when none other was possible, and it constituted the very embodiment of an overall guerrilla warfare strategy, attacking the enemy on its peripheries, in this case its industrial centres.

From 1942 onwards, the Combined Bomber Offensive (CBO) was a highly effective, prolonged, cooperative effort between the American United States Strategic and Tactical Air Force (USSTAF) and the "British" or Bomber Command camps. While both camps at times placed the emphasis of efforts upon different components of the enemy's war-making capabilities, there was a tremendous amount of overall synergism and mutual support. For example, the combined efforts of Bomber Command and the USSTAF ultimately destroyed

virtually all of Germany's coke (which is coal after the removal of associated gases), ferroalloy and synthetic rubber industries; 95 per cent of its fuel, hard coal and rubber capacity; and 90 per cent of its steel-making capacity.<sup>1</sup> Conversely, Bomber Command attacked many precision manufacturing targets during the course of the war.

Very early on, Bomber Command determined that daylight attacks were cost prohibitive in terms of aircrew and aircraft losses, accepting the fact that the protective mantle of darkness would also, until improvements could be made, adversely affect navigation and bombing accuracy. Then followed a long period of changing attack priorities and lacklustre, indecisive bombing results. And, in terms of policy inputs from senior leadership, as early as 8 July 1940, Churchill had written:

When I look round to see how we can win the war I see that there is only one sure path. We have no continental army which can defeat the German military power. The blockade is broken and Hitler has Asia and probably Africa to draw from. Should he be repulsed here or not try invasion, he will recoil eastward, and we have nothing to stop him. But there is one thing that will bring him back and bring him down, and that is an absolutely devastating, exterminating attack by very heavy bombers from this country upon the Nazi homeland.<sup>2</sup>

In counterpoint, on 9 October 1940, after repeated attacks upon the British cities, *Reichsmarschall* Hermann Göring, Commander-in-Chief of the Luftwaffe, made public a plan to not only obliterate

London and demoralize its citizens by bombardment but also paralyse Britain's broader industrial and commercial capabilities. In sum, therefore:

Inch by painful inch, both British and German policies were slipping from ones aimed at precise objectives to ones of area bombing with psychological overtones. On 2 September, for example, Portal [Sir Charles Portal, Air Officer Commanding-in-Chief (AOC-in-C) Bomber Command] observed that although he was not yet involved in attempts to burn down whole towns, "that stage would come." The next day Churchill asked that Bomber Command "pulverise the entire industry and scientific structure" of the German war economy; and, three days later, he called for a series of "minor" but "widespread" attacks on smaller German towns intended to destroy the population's faith in their air defences.<sup>3</sup>

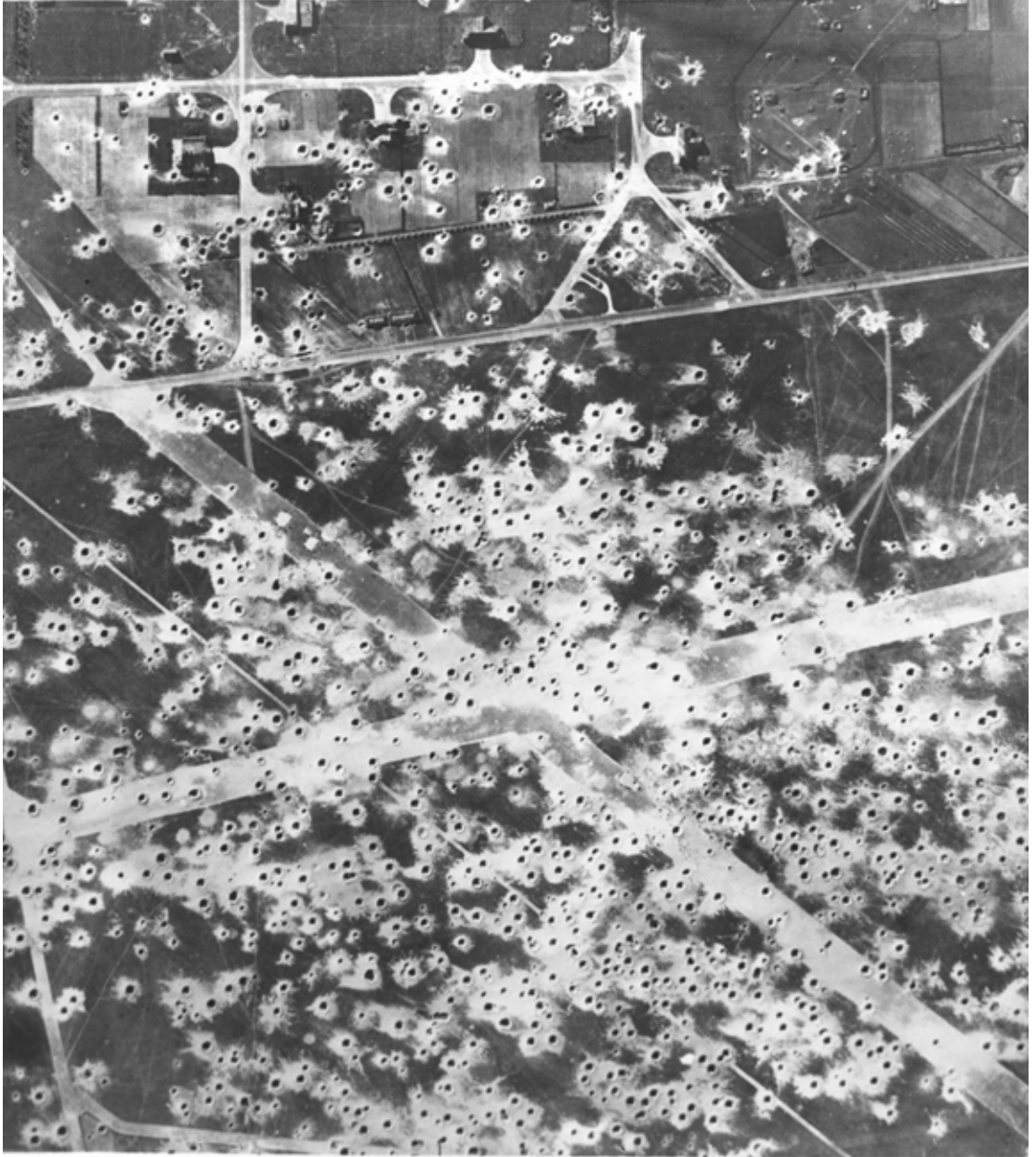
While enemy oil assets continued to be a high priority target when the weather cooperated, on 9 July 1941, yet another policy directive postulated that "the weakest points in [the enemy's] armour lie in the morale of the civilian population and in his inland transportation system."<sup>4</sup> This directive would pave the way for even broader policy changes, and henceforth, Germany would be bombed more frequently, with greater intensity and with less target discrimination.

Throughout the first half of 1941, it was becoming increasingly obvious that the night campaign was not meeting damage expectations. Delivery accuracy was still woefully inadequate. A 1941 analysis commissioned by Churchill's

scientific advisor, Frederick Lindemann (later Lord Cherwell), and known as the Butt Report ultimately stressed the need to examine bombing techniques and to improve navigational procedures, as the only realistic alternative—massive

daylight raids—was considered just too dangerous.

In sum, the Butt Report deemed the bombing—with respect to accuracy and results obtained for the costs



incurred—pathetic. In the near future, in acknowledgement of existing and anticipated capabilities, less target discrimination would be demanded and more aids to navigation and targeting would be developed. Lord Cherwell, a firm believer in the efficacy of area bombing and in full agreement with the Butt Report, presented a seminal paper to Cabinet that advocated area bombing as the keystone of a concentrated strategic bombing campaign against the Axis forces. The plan proposed attacking Germany's industrial centres in order to destroy as much working-class housing as possible in order to displace the German work force and to disrupt/reduce their ability to work.<sup>5</sup>

The next pivotal bombing policy direction came on 14 February 1942, with the release of Policy Directive #22. Issued by Air Chief Marshal Sir Charles Portal, former AOC-in-C Bomber Command and now Chief of the Air Staff, and as a direct result of the Butt Report and Cherwell's approved Cabinet presentation, Portal mandated that, henceforth, the primary objective of Bomber Command was to be "the morale of the enemy civil population and in particular, of the industrial workers."<sup>6</sup> These attacks were to be manifested as large raids upon selected area targets in the major industrial areas of Germany, and while industrial, military and infrastructure aim points were always to be identified and specified, collateral damage in terms of "dehousing" the civilian population was considered an acceptable, indeed a desirable, adjunct to the bombing. The Ruhr area, especially Essen, as well as Berlin, were considered of primary interest. Further, "to make sure there was no misunderstanding about what was being called for, the next day Portal

told his deputy to tell Bomber Command Headquarters that 'the aiming points are to be the built-up areas, not, for instance, the dockyards or aircraft factories where these are mentioned.'"<sup>7</sup> This last point deserves emphasis, for it acknowledges the command's non-precision capabilities at this particular point of the war as well as the generalized propensity in the Western world for building up suburbs around industrial complexes. It is also important to understand that aiming for the hub of an industrial city was likely to inflict damage upon key transportation and communications nodes, such as telephone and telegraph command services, railway stations and marshalling yards, since they tended to be centralized within urban developments.

And while it is probably fair to say that urban centres of the industrial cities were the default aim point of Bomber Command throughout much of the war, it must be emphasized that the industrial city bombing constituted only a portion of the command's efforts. To be precise, of Bomber Command's wartime total of nearly 1,000,000 tons [907,000 tonnes] of ordnance expended—or half the Anglo-American aggregate dropped upon the Third Reich and its proxies—only 431,000 tons [391,000 tonnes] (43 per cent) were dropped upon the industrial cities. Quite simply, Bomber Command was not a force dedicated to the assault of Germany's economic system.<sup>8</sup>

## A NEW HELMSMAN

On 24 February 1942, Arthur Harris became the AOC-in-C of Bomber Command. Throughout the war, Harris would remain hostile to the concept of "panacea" targets, specific elements



of the enemy's military, industrial and infrastructure capabilities and capacities that, if totally eliminated, would destroy its ability to wage war. And although the accuracy of Bomber Command increased remarkably over the course of the war, Harris believed that an enemy economy and social structure could not be dislocated, thus forcing a political decision to capitulate, by an attack on any single element. Electronic aids, sophisticated marking techniques, stabilized automatic bomb sights, vastly improved weaponry as well as highly refined and sophisticated attack tactics would significantly improve delivery accuracies over the course of the war for Bomber Command's main force, although many of these refinements would not fully blossom until the closing months of the European war. However, with the exception of several highly specialized, precision-attack units (such as 617 and 9 Squadrons flying Lancasters and 106 Squadron of the Light Night Striking Force flying Mosquitos), the bulk of Bomber Command remained "a blunt instrument," generally incapable of attacking targets with the uncanny precision, accuracy and reliability of today's forces and munitions. This in mind, Harris pursued a broader strategy that he believed would use that instrument to best effect, and his dogged obstinacy to reject all specific, exclusive types of targets (notably ball bearings but particularly oil) would become the main objection to his wartime leadership of the command.<sup>9</sup> However, in fairness to Harris, he had sound reasons for applying his broader strategy.

The next pivotal policy determinant was "The Report on the Bombing of Germany," written by an independent assessor, Mr. Justice John Singleton.

While Singleton's report played down the view that area bombing could win the war by itself, he believed it would impede the German war effort and would also provide much-needed relief to the Soviet Union. He asserted that Germany's war efforts could be limited and hampered by attacks upon factories engaged in war work as well as by damage to communications grids and public utility services. Reports of the period coming in from citizens of neutral countries visiting the Third Reich tended to bolster this view. Singleton believed that significant gains could be realized by tying-down enemy resources required to defend against the bombing threat and repair bomb damage, and he offered that enemy morale was also likely to be adversely affected by the bombing. He also saw a need for more sophisticated target identification devices that were unaffected by atmospheric conditions, and he recommended the establishment of a specialized target identification force.<sup>10</sup>

Harris and his planners took great heart from these findings, and accordingly, in August, a specialized target identification and marking unit was officially established as the Pathfinder Force, #8 Group. Through trial and error as well as the development and implementation of innovative techniques and equipment for target detection and marking, the Pathfinders would significantly enhance the accuracy of the main-force bombing, particularly during the closing hours of the European war.

On an encouraging note for Bomber Command during 1942, there was a growing body of evidence that, in spite of the direct damage to German industry caused by the bombing raids, "the most serious problem confronting the German authorities [was] that of re-housing the

bombed-out population and providing them with clothing and other necessities of life.”<sup>11</sup> Again, various source inputs appeared to be providing compelling proof of the validity of area bombing. Citing a well-placed, clandestine source of the period, in close touch with the *Reichsluftfahrtministerium* (RLM or German Air Ministry):

At the moment the fear of the RAF giant raids is far greater than any anxiety about an invasion ... . These big raids cause mass destruction. In spite of the statements in the Wehrmacht reports, the destruction of war production facilities is fairly considerable. The loss caused by the destruction of food stores and depots is extraordinarily great, as the food cannot be replaced. The effect on the civil population of such raids is not to be underestimated. For instance, in Köln (Cologne), there were between 3000 and 4000 dead [officially only just over 100 were reported], which of course the population of Köln knew very well. They spread the information, and this undermines confidence in the reports of the Wehrmacht. In Köln there were at least 200,000 persons rendered homeless, who for the most part have been evacuated, as in the city itself no new buildings or temporary premises could be erected quickly enough. The problem of the homeless people is the most difficult. There is a shortage of houses and accommodation everywhere, in the country as well as the towns. As a result, wooden hutments have to be erected everywhere ... . In the RLM there are officers of high rank and influence who seriously fear that the winter will see unrest and

demonstrations, unless the mass raids are successfully dealt with. But if the SS [*Schutzstaffel*] has to be used against the civil population, a deplorable situation will arise. According to these officers the great danger is not an invasion, but the systematic destruction of German towns by the RAF.<sup>12</sup>

The importance of bringing forward excerpts from these source documents is to make the point that the bombing offensive was evolving and developing, based upon capabilities, analysis and direct feedback from reliable intelligence sources. Bombing policies were not being developed in a void.

At this point in time, a few words with respect to Harris’s relationship with his wartime charges as well as his method of command are perhaps appropriate. Although Harris was not able to visit his aircrew and ground crew as frequently as he would have wished, he still managed to win and hold their respect, loyalty and trust, even when they were faced with the most daunting odds, and he cared deeply about his people. Harris’s biographer, Air Commodore Henry Probert, elaborates:

Harris’s firmness could easily be seen by others as stubbornness and obstinacy; his single-mindedness could come across as an inability to see others’ points of view or to appreciate the wider political and military constraints; his all too frequent exaggerations, usually intended as a means to emphasise his views, were often considered as lapses of judgment. There is truth in such criticisms, and despite his good work in his two Air Ministry tours of duty he was never cut out for top level

staffwork, as he himself knew. He was essentially the sort of commander who emerges in a crisis, one for which his knowledge and experience happen to have particularly prepared him. ...

Yet all too often Harris continues to be portrayed as the hard, insensitive man, totally concentrated on using his bombers to beat the enemy by destroying his homeland, and unconcerned about the implications for the human beings involved. This is far from the truth. Certainly he could be remote and difficult at times but the many who knew him,

especially away from the immediate business, found him kind, generous, humorous, compassionate, amply possessed of the human touch. He did care for people, and never more than the men who served under him—including, most importantly, those who came from the nations of the Commonwealth and elsewhere. Towards the enemy, while he hated the slaughter involved, his feelings were dominated by the conviction that the war must be won as quickly as possible, in their interests as much as in those of his own compatriots.<sup>13</sup>



## FRIENDS JOIN THE FIGHT

Commencing in July 1942, Britain and the Dominions would no longer find themselves alone in their bombing campaign against the Reich. With characteristic American vigour and enthusiasm, the “Mighty Eighth” Air Force of the United States Army Air Forces (USAAF) had begun a rapid build-up in southern and central Britain. Between the Eighth Air Force and the many stations occupied by Bomber Command, the little island nation was soon transformed into a vast, stationary aircraft carrier. Ultimately, the American contribution would be huge, and from January 1944 onwards, the Eighth Air Force would be joined by heavy bombers of the Fifteenth Air Force, operating from bases in North Africa and Italy. By early August 1942, advance crews of the Eighth had been pronounced combat ready, but based upon their own early war experience, the British remained highly sceptical of the American daylight-only, massed-formation tactics.

Nonetheless, in spite of British concerns, the Americans were bound and determined to implement a daylight bombing strategy. At the Casablanca Conference of January 1943, a working, synergistic bond was formed that would provide the blueprint for the cooperative effort that would characterize the bomber war over Europe until the end of hostilities. After Churchill and Roosevelt had reaffirmed their overall “Germany First” plan to defeat the Third Reich and its cronies prior to “finishing the job” in the Pacific, a strategic compromise was struck to carry the land war next to Sicily and Italy, continuing to attack the enemy on

its peripheries but postponing a cross-Channel invasion for the time being. Meanwhile, the combined forces of Britain, the Dominions and the United States would mount a mighty CBO against targets in the greater German Reich, the European Axis powers and Occupied Europe. Sir Charles Portal, in particular, as Chief of the Air Staff, firmly believed that the CBO would render 25 million Germans homeless and, more importantly, would bring war production to a complete standstill. This campaign would entail “the progressive destruction and dislocation of the German military, industrial and economic system, and the undermining of the morale of the German people to a point where their capacity for armed resistance is fatally weakened.”<sup>14</sup> Within that general concept, the primary objectives at that time, subject to the demands of weather and tactical feasibility and in order of priority, were to be German submarine construction yards, the German aircraft industry, transportation targets, oil plants and other targets within the enemy war industries. Every opportunity was to be taken to attack Germany by day, destroy objectives that were not suitable for night attack (in other words, the American mandate), sustain continuous pressure upon German morale, impose heavy losses upon the German day fighter force, and contain German fighter strength and keep it away from the Soviet and Mediterranean theatres of war.

“Bombing around the clock” became an enormous Anglo–American strategic cooperative effort which lasted for the following 16 months until the spring of 1944, when Bomber Command would be seconded temporarily to Supreme



Headquarters Allied Expeditionary Forces (SHAEF) under General Eisenhower, flying in support of the planned D-Day landings in France.

Within the overall broad strategy that had been agreed upon at Casablanca, the two Anglo-American bombing armadas would place their operational emphasis upon different mandated priorities with respect to the enemy's resources at different periods of the campaign, although there was also a great amount of synergism and overlap conducted throughout. Nonetheless, until Bomber Command was seconded to SHAEF in April 1944, it tended to favour attacks upon the broader Axis industrial base, particularly the primary industries and associated infrastructure that supplied and fuelled the precision manufacturing element, such as production of coal, steel and pig iron as well as transportation nodes, power sources and mines. By contrast, the Americans preferred direct attacks upon the aircraft-manufacturing and ball-bearing industries and enemy oil resources. However, readers must bear in mind that Bomber Command had previously identified enemy oil as a significant target much earlier in the war but had temporarily abandoned pursuit of this target due to the pinpoint accuracy required to successfully attack the refineries and the concomitant inconsistency this presented with the night area-bombing strategy. Thus commenced in earnest the great, cooperative aerial onslaught against Hitler's *Festung Europa* (Fortress Europe). It would result in over 2,000,000 tons [1,814,000 tonnes] of ordnance being dropped upon European Axis targets. However, it would also demand a very high toll in aircrew blood, including over 81,000 total wartime aircrew fatalities from RAF Bomber Command and the USAAF.

## ANGLO-AMERICAN DIFFERENCES OF OPINION OVER THE IMPORTANCE OF ENEMY OIL

A significant point of divergence between Bomber Command and the Americans was the importance initially allocated to oil as a priority target. Furthermore, this divergence eventually would lead to a confrontation between Sir Charles Portal, as Chief of the Air Staff, and Sir Arthur Harris in his role as Bomber Command's helmsman. By late-September 1944, once the land campaign had stagnated in northwest Europe and the strategic bomber forces had been returned to the fold of their respective air staffs, Harris sensed that an unrestricted return to his general area-bombing campaign of the German industrial heartland was in the wind, but this was not the priority intention. At that time and for the immediate future, although earlier counter-air action no longer had any particular priority, relative air superiority having now been attained, the generalized city offensive was only to be undertaken when conditions were unfavourable to executing the new priorities. These new priorities certainly suited General Spaatz, since oil, which had been a priority target for the Americans since the summer of 1943, had been placed squarely in the highest position by the British Air Staff, which, by the autumn of 1944, had warmed to the American point of view, and it was once again Harris who appeared to be out of synchronization. To Harris, oil remained the hated panacea he had perceived it to be from the outset, albeit for good reasons, given the Soviet capture of Ploesti and the other Rumanian oil fields in August 1944, the concomitant denial of Rumanian oil to the Axis powers, and the fact that Bomber

Command had already expended, as we have seen, considerable time and effort with respect to enemy oil. Furthermore, the relative accuracy required to hit these targets was hampered in both the American and the Commonwealth camps by the vagaries of northern European weather during the period. That said, by late autumn 1944 and throughout 1945, Bomber Command was actually outdoing the Americans in sorties against enemy oil assets. However, according to Probert:

He [Harris] was still deeply suspicious of the prognostications of the Ministry of Economic Warfare; synthetic oil production was spread over many plants, often small, in different parts of Germany, and up-to-date intelligence about them was hard to obtain; the Germans under Speer were adept at dispersal and repair; and effective attack required a degree of accuracy which he was far from convinced his aircraft could achieve, especially against more distant targets.<sup>15</sup>

As Harris himself later recognized, oil did prove more critical than he had judged at the time. Influenced by the views of Albert Speer, Hitler's Armament Minister, Harris wrote in 1947 that in the final weeks of the war all the German armed forces had been immobilized for lack of fuel, rendering the triumph of the oil offensive complete and indisputable. It was the one panacea that actually paid off.

Nonetheless, there is no doubting the ultimate success of the Oil Plan, and it remains an unanswerable question as to just how much, if at all, the European war could have been shortened had Harris embraced the plan with more enthusiasm at the outset. That said, in spite of the

aforementioned differences of opinion, the counter-oil campaign was a highly successful cooperative effort.

## THE WAR AGAINST ENEMY TRANSPORTATION

An earlier joint effort known as the Transportation Plan also proved to be a very effective precursor to the Normandy landings. Designed to disrupt rail communications by attacking some 74 key rail centres in France and Belgium as an obvious Operation OVERLORD priority, on 15 April 1944, Bomber Command was allocated 37 of the rail targets; the other half were assigned to the Americans. By the eve of D-Day, some 60 separate attacks had put at least two-thirds of the assigned Bomber Command targets out of action for a minimum of a month, a much better record than that accomplished by the Americans against their assigned targets.<sup>16</sup> And continued, unrelenting pressure by the strategic bombing forces upon Axis road, rail and waterways from this point onwards until the end of hostilities would yield very tangible results against an enemy transportation network that was already stretched to the limit, due to the dynamic and changing operational requirements and the tremendous additional burden of forced industrial decentralization, which had been brought about by the bombings.

With respect to the overall transportation campaign, Bomber Command's deliberate area bombing of industrial city centres from early in the war generated a high, prolonged and sustained degree of damage to core road and rail assets, a much more concentrated degree of damage than that waged by the sporadic attacks of the Americans until

they specifically targeted enemy city centres later in the war. Downstream from the pre-OVERLORD attacks, Bomber Command devoted extensive resources against enemy transportation networks and facilities. Perhaps none were more effective than the attacks upon the German waterway systems, particularly those on the Rhine River and the Dortmund Ems Canal. During the last four months of the war, Bomber Command devoted 15.4 per cent of its total efforts against enemy transportation assets. And between October 1944 and March 1945, the attacks on both rail and water transportation networks were so effective that the Germans

could scarcely manage 12 per cent of throughput of critical resources to the industrialized Ruhr, and this included the near-total curtailment of coal.<sup>17</sup> Also due to strategic bombing, the virtual collapse of the transportation networks by 1945 meant that Germany's still-enormous field armies could no longer be reliably supplied or armed.

## POUNDING THE REICH

It was during the last calendar year of the war that Bomber Command reached its most productive and destructive apex. Back on 3 November 1942, as a precursor



to the Casablanca Conference, Portal, with a major input from Harris, had presented the British Chiefs of Staff with a blueprint for a joint Anglo–American bombing offensive, which based their bombing strategy on the assumption that a combined bomber fleet of 4,000–6,000 aircraft would be continuously available.<sup>18</sup> And 1944–1945 was decisive for the strategic bombing campaign, with over two-thirds of the total wartime bomb tonnage being dropped on the greater German Reich from July 1944 onwards. Also, along with vastly declining German defensive capabilities, due in no small measure to the overrunning of German early warning sites in the land battle for the Continent, Bomber Command's monthly average number of sorties increased from 5,400 in 1943 to 14,000 in 1944, and their average payload-per-sortie nearly doubled.<sup>19</sup> And from the summer of 1944 onwards, once relative air superiority had been attained over Northwest Europe, Bomber Command would complement its night attacks with more frequent daylight operations.

At this point, the frequently misunderstood concepts of American precision, daylight bombing and British night area bombing need to be addressed and placed within a proper context.

In point of fact, from late-1943/early-1944 onwards, both the British and the Americans were area bombing or “blind bombing,” as it was referred to in USAAF circles. From the official USAAF history:

Approximately 80 percent of all Eighth Air Force and 70 percent of all Fifteenth Air Force missions during the last quarter of 1944 were characterized by some employment of

blind-bombing radar devices. Without these aids important targets would have enjoyed weeks or months of respite and on several occasions major task forces failed even with radar to reach their objectives because of adverse weather ... . In mid-November 1944, operations analysts of the Eighth estimated that nearly half the blind missions were near failures, or worse.<sup>20</sup>

Richard Overy takes this point even farther: “The US air forces soon abandoned any pretence that they could bomb with precision, and two-thirds of their bombs were dropped blind through cloud and smog. A staggering 87 percent of all bombs missed their target.”<sup>21</sup>

In their defence, weather conditions over the European continent were forcing the blind-bombing option upon both camps. It is ironic, however, that while the USAAF had commenced in earnest to make area attacks from late-1944 onwards, Bomber Command, on a selective basis, was now making precision attacks, both night and day, upon specific military and industrial targets. Technological advances abounded. Gee-H<sup>22</sup> represented a quantum leap in the development of navigation systems, since it combined levels of accuracy comparable to Oboe<sup>23</sup> with the universal applicability of Gee. It had been introduced to service by 3 Group in 1943, and it was eventually used by other formations. Around the same time, the K-band H2S Mark VI radar was also fielded, and this alleviated some system limitations over poorly defined or obscured targets. Furthermore:

Bomber Command coupled these new devices with revised tactics. Navigation was now so accurate that



decoy fires and spoof raids could be used within a few miles of the actual route. The navigators and bomb-aimers were now sufficiently skilled to use an offset bombing point chosen for its visibility, and to aim their bombs at a given range and bearing from that point.<sup>24</sup>

## THE FINAL ROUND

By 1945, target-marking techniques in Bomber Command had reached new levels of maturity and sophistication, including the increasing use of offset tactics. The offset procedure reduced the predictability and, thus, the vulnerability of the attacking bombers. Also, multiple streams consisting of simultaneous large-scale efforts on different targets were common by 1945, further confusing the defences and further reducing predictability. By this stage of the war, given the predominating weather over the Continent, Bomber Command had acquired so much expertise in blind bombing and the innovative use of radar and other electronic aids that its most experienced crews were generally as comfortable bombing in obscured conditions at night, with comparable results, as they were when bombing “in the clear” by daylight. For their part, the Americans had accepted that weather, navigation and target finding were significant problems affecting operations.

By early 1944, the Eighth Air Force had come to rely extensively upon “blind” attacking targets by Oboe and by H2X.<sup>25</sup> In fact, “on only one occasion in six weeks [during January and early February 1944] were the skies clear enough for visual bombing.”<sup>26</sup> And that reliance upon electronic aids would only increase during

the rest of the bombing campaign. By early 1945, in a further broad distillation of precision bombardment and a tacit acknowledgement that area attacks had become accepted American strategy, a new crew member known as the “togglie” frequently replaced the much more extensively trained (and usually commissioned) bombardier in American bomber crews.

## DRESDEN

Operations by both Bomber Command and the USAAF on 13/14 February 1945 against Dresden resulted in massive destruction and loss of life. Conditions combined to produce a true firestorm, one of just three that occurred in the European theatre, the others being at Hamburg in July 1943 and then at Kassel in October 1943.

Dresden. ... The city, and its very name, has become a poster child for the opponents of the area-bombing campaign, but there is a lot of mythology that has been generated over these late-war raids. While it is true that the bombing destroyed much property and thousands of German lives, the number of fatalities was greatly exaggerated from the outset (by a factor of up to 1,000 per cent)<sup>27</sup> in an extremely effective propaganda campaign waged by the German Propaganda Ministry through the neutral countries and the United States and then later by the USSR during the cold war.

And contrary to popular belief, Dresden in 1945 was far more than just a beautiful baroque centre of cultural significance. It was also an armed camp and was home, most importantly, to a vital communications and transportation

hub as well as a control node for the resupply and sustainment of Eastern Front operations. In addition, it hosted scores of embedded factories that produced goods vital to the German war effort, including the massive Zeiss-Ikon complex. Furthermore, it had been a long time since Zeiss-Ikon had produced anything as innocent as a holiday snapshot camera. Dresden, in short, was a highly legitimate military target.<sup>28</sup>

## A CERTAIN DUPLICITY

However, by the spring of 1945, the eddies of public disquiet generated by the Dresden bombings were swirling. By late March, perhaps with an eye cast towards his legacy, Churchill penned a minute to his senior uniformed chiefs which Bomber Command's eventual

historians would later consider “perhaps the least felicitous,” well-expressed or appropriate of all the prime minister’s wartime correspondence.<sup>29</sup> The minute appeared to endorse all the latest public criticism of Allied bombing policy, and it also seemed to shift the blame from the prime minister’s shoulders to those of the air commanders responsible for implementing the policy. The implication was that Churchill had been misled and that his air leaders were conducting terror bombing on their own initiative, without his knowledge, but both conditions were patently false.<sup>30</sup> Portal immediately solicited Harris’s comments, who vehemently objected to the minute, deeming it a serious slight against his airmen who had endured so steadfastly throughout the campaign. Churchill also appears to have exercised a conveniently selective memory when he penned the



offending minute, choosing to ignore the various telephone conversations, memos and directives to the Secretary of State for Air, Sir Archibald Sinclair, in January which had urged bombing attacks upon the eastern cities. "Churchill was well aware that the RAF was going to attack Dresden ...; the decision to do so had originated in Cabinet and had his full support."<sup>31</sup> Also, his enthusiasm for using bombing as a punishment had led to excesses in rhetoric on occasion, and they frequently required others, including Harris, to set Churchill's moral compass straight. The repeated considerations of reprisal raids in response to the German razing of Lidice, Czechoslovakia, in 1942 and the Crossbow campaign against the V-weapons in 1944 constitute ample proof of this trend in the prime minister's behaviour.<sup>32</sup> Ultimately, Portal enthusiastically endorsed Harris's views with respect to the Dresden raids, in particular, and with respect to area bombing, in general. Sir Archibald Sinclair then asked Churchill to withdraw the offending minute, and on 1 April 1945, Churchill substituted a replacement note. The revised minute contained no further reference to either terror attacks or to the raid on Dresden. Nonetheless, the damage had been done, and in spite of Chairman of the Chiefs of Staff Lord Ismay's assurances to the contrary, the first minute *also* remained on file, and the effects of public scrutiny and analysis of it in future would be far-reaching.<sup>33</sup>

## WITH A VIEW TO THE FUTURE

As spring 1945 continued to unfold, the prime minister's newfound determination to put an end to the bombing of the German cities, undoubtedly fuelled by concerns for both his legacy and his

political future, took effect rapidly. The Air Staff recommendations that fell out of the prime minister's wishes were subsequently approved up the chain of command, and Sir Arthur Harris was so informed on 6 April. However, Portal very clearly articulated the purpose of, the justification of and the caveats under which area bombing could, if necessary, still be conducted. Portal has been cited frequently, like Churchill, as having an eye to the historical record and distancing himself from Harris and Bomber Command's campaign against the industrialized cities. However, in spite of the aforementioned disagreements with Harris, Portal staunchly defended him to those in higher authority, and he made it very clear that area bombing still had its place. He remained convinced that it was useful under certain circumstances, even at that late stage of the war. He also made it clear that Bomber Command's precision attack-capability was relatively newfound and that, even with all the technological and tactical advances, it had its limitations, as precision-bombing capabilities were still not widely practiced by the bulk of the main force.<sup>34</sup>

Shortly thereafter, hostilities in Europe would conclude, but a vast amount of unfinished business still remained in the Pacific theatre. Strategic bombing had truly come of age in the European theatre of operations, and many of the bloody lessons learned there would soon be applied to telling effect against the Empire of the Sun.

## AREA BOMBING AND THE JAPANESE WAR

Not the least of the wartime contributions of the Allied bombing campaign

in Europe was its influence upon the war against the Japanese empire. In the Pacific theatre, B-29 Superfortresses started pounding the Japanese home islands from bases in the Marianas in late-1944. However, their attempt at precision bombing from high level using high-explosive weaponry proved relatively ineffective. Early in March 1945, they borrowed a page from the area-bombing methods honed in Europe; abandoned attempts at precision bombardment; and switched their bomb runs to delivery from medium level against area targets, commencing with incendiary laydowns. The high-water mark of these raids was that conducted against Tokyo on 9/10 March 1945, which left nearly 125,000 killed and over a million homeless. Overall, by war's end, most major Japanese cities had been laid to waste, and 42 per cent of the nation's industrial capacity had been destroyed.<sup>35</sup> Intensely demoralizing, these raids brought Japan to the brink of surrender. And yet, based upon the fierce determination to resist an Allied invasion of the home islands, the Allied Executive was gravely concerned about the blood costs to *both* sides should an invasion of the home islands prove necessary.

By the summer of 1945, extensive planning was taking place for Operation DOWNFALL, just such an invasion, and on a scale dwarfing that accomplished on D-Day. It was scheduled for commencement on 1 November 1945, initially through the southernmost island of Kyushu. Recent and compelling research makes the point that the true estimates Allied planning forces were working with at the time with respect to their anticipated losses were 1.7–4 million casualties.<sup>36</sup> Indeed, the Japanese Supreme War Council was determined

to commit the nation to mass suicide if necessary, calling “for the sacrifice of up to 100,000,000 Japanese lives, if necessary, to repel the Allied invasion of the home islands.”<sup>37</sup> The area bombing of Japan had certainly dealt a debilitating blow to the Japanese war industries, and the remaining factories were on the verge of collapsing for want of component parts and damage to infrastructure. However, there was also no shortage of suicidally inspired pilots available and willing to substitute courage for technological inadequacy and to dive their aircraft into a massed Allied invasion force. Furthermore, “orders went out that every Japanese man between the ages of 15 and 60 and all women aged 17 to 40 would meet the invaders at beaches with sharpened bamboo poles. Allied peace feelers were rejected.”<sup>38</sup>

At home, all the Allied nations were becoming increasingly war weary in light of the extensive casualties endured during the last calendar year of the European and Asian wars and the economies that had been excessively “tapped” by war expenses. Labour unrest was intensifying, particularly in Britain. Therefore, the perceived cost of invading the home islands, both in America and in Britain, posed serious challenges to public will and support. Although it was a painful decision for the Allies, the two atomic drops on Hiroshima and Nagasaki—the epitome of strategic area bombardment—with the concomitant loss of an additional 150,000 Japanese citizens—and many more to follow from radiation poisoning—when combined with a rapidly worsening war situation, the entry of the USSR into the Pacific war, and the continued decimation of the industrial cities, all helped convince the Japanese that further resistance



was pointless. Defending against massed fleets of formidable, heavily protected B-29 Superfortresses was difficult enough, but the atomic drops helped convince the Japanese that they were relatively powerless to defend the entire nation from the high and fast flying, singly penetrating B-29s that could be using atomic weapons on any part of the nation, the ultimate shell game, to draw an analogy.

Finally, on 10 August 1945, the Japanese stated that Imperial Japan would accept the surrender terms previously announced at the Potsdam Conference, provided the Allied powers explicitly allowed Emperor Hirohito to remain as the country's sovereign ruler. The underscoring of the futility of further resistance plus the guaranteed preservation of the Japanese monarchy spared the Japanese people from the obligation of being killed to the last available man and woman.<sup>39</sup> Therefore, strategic area bombing, honed in the European war, undoubtedly played its part in preventing many casualties, both Allied and Japanese, by helping to eliminate the need for an armed invasion of the Japanese mainland, the costs of which, measured by any yardstick, would have been horrific.

## THE BALANCE SHEET

Critics of the bomber offensive suggest that the materiel and human cost of the campaign far overshadowed the gains and that the resources dedicated to it could have been more effectively utilized elsewhere. They have argued that the combat manpower could have been better used in the other fighting services, especially by the army during

the gruelling campaign in northwest Europe, and that industry could have been used to produce more weapons for these fighting services. However, proponents of this line assume that the weight of effort expended upon the bombing campaign was inordinately high. Overy maintains that it was actually rather modest. "Measured against the totals for the entire war effort (production and fighting), bombing absorbed 7 per cent, rising to 12 per cent in 1944–45. Since at least a proportion of bomber production went to other theatres of war, the aggregate figures for the direct bombing of Germany were certainly smaller than this. Seven per cent of Britain's war effort can hardly be regarded as an unreasonable allocation of resources."<sup>40</sup> Further, some Bomber Command squadrons were in fact seconded to Coastal Command for limited patrol duties, but Bomber Command's operational fleet was not particularly suited to long-range maritime patrol. As it was, these secondments diluted the resources of the command when it was still not at its fully effective strength. Aerial relief in the North Atlantic, in the form of closing the so-called "black hole" of patrol coverage, would eventually be provided through the acquisition of very-long-range Consolidated B-24 Liberator patrol aircraft, a type not included in Bomber Command's inventory in Europe.

Much of the criticism of the bombing campaign has focused upon the human cost, the unquestionably heavy loss rates endured by Anglo-American aircrews, 81,000 of whom forfeited their lives aboard 18,000 downed aircraft from the Eighth Air Force and Bomber Command alone. On the Axis side, approximately 593,000 non-combatant fatalities are attributable to the bombings. However, these losses need to be placed in

perspective, especially when compared to 20–27 million war dead suffered by the Soviet Union. Nonetheless, the human cost of the campaign was formidable.

During the war, Bomber Command's 125,000 airmen flew 364,514 sorties over Europe, and the majority of the command's tonnage was dropped from the summer of 1944 until the cessation of hostilities. Approximately 74 per cent of the total tonnage was delivered after 1 January 1944, and 70 per cent of the total after 1 July 1944, from which time forward the Bomber Command loss rates were greatly reduced. "If the bombing of Germany had little effect on production prior to July 1944, it is not only because she had idle resources upon which to draw, but because the major weight of the air offensive against her had not been brought to bear. After the air war against Germany was launched on its full scale, the effect was immediate."<sup>41</sup>

## THE CONTRIBUTIONS TO VICTORY OF THE BOMBER OFFENSIVE

The gains not only were those directly attributable to the bombing, such as the actual destruction of targets, but also constituted a host of indirect benefits brought on as adjuncts to the bombing. While part of the bombing effort was to be directed at Germany's home-front military and economic structures, very large portions of the overall effort were directed at many other targets for which Bomber Command's aircraft were needed. As Overy has mentioned, not even half the Command's total wartime dropped bomb tonnage was dedicated to the industrial cities. Also, during the latter stages of the campaign, even attacks against

industrialized cities were frequently tactical rather than strategic, conducted in support of the advancing Allied land armies. For much of the first four years of the war, support for naval operations—particularly the mining of enemy littoral waters and the Western Baltic Sea, attacks against the U-Boat production and operational facilities as well as the destruction of six German capital ships (the entire Royal Navy only destroyed four)—comprised a significant portion of Bomber Command's overall effort,<sup>42</sup> while for much of 1944, it was extensively used in support of the invasion of northwest Europe. Additionally, Bomber Command aircraft were utilized for reconnaissance, propaganda missions, electronic warfare and deception operations, support to Occupied Europe's resistance movements as well as humanitarian aid and mercy missions towards the end of hostilities. Bomber Command was a true jack of all trades, and it required the full resolution of its commander, Sir Arthur Harris, not to become excessively and repeatedly diverted from its primary mandate, due to all the competing demands upon its limited resources.

That said, and with the benefit of "20/20 hindsight," while Arthur Harris was undoubtedly correct in his assessment of the need for a broad application of area bombing during most of the campaign, his dogged rejection of the so-called panacea targets later in the war appears to have been *somewhat* myopic. Albert Speer and others dreaded timely follow-on efforts to the highly successful 1943 attacks on the Ruhr dams, Hamburg and the ball-bearing industry, and they believed that such a concentration of effort at the time would have been cataclysmic for the Reich.<sup>43</sup> Similarly, an earlier and more dedicated application of effort



against the enemy's oil resources, which pitted the Commander-in-Chief Bomber Command against the Chief of the Air Staff, *might* have brought the European war to a *somewhat* earlier conclusion. But such is the fog of war, and Arthur Harris sincerely believed he was following the correct course and was utilizing his command to inflict the most damage under the circumstances presented to him.

Furthermore, British historian Robin Neillands believes that, unlike the later atomic drops upon Japan, Harris simply did not have the weapon to devastate Germany in a manner that would concomitantly crush the German will to resist. Neillands offers that Harris:

was also hindered throughout his campaign by a classic piece of military miscalculation, a failure by the Allied Combined Chiefs of Staff to maintain the aim.

The aim of Bomber Command operations, [apart] from the time they began in 1939, was *to carry the war to the heart of the enemy homeland*. That was what the strategic bomber was *for*, and no one in authority disputed this. [Churchill had said,] "There is one thing that will bring him (Hitler) down, and that is an absolutely devastating, exterminating attack by heavy bombers on the Nazi homeland. ..." [But] what [Harris] needed was more aircraft and a free hand.

Instead, there was a failure, at all levels, to maintain this intention and carry it through. The main failure lay in not providing Bomber Command with the wherewithal to carry out this declared intention; it was not the fault

of Air Chief Marshal Harris. From the earliest days of the war there was a continual diversion of bomber strength, with aircraft and crews sent to North Africa and Italy, to Coastal Command and to the Far East. This steady drain prevented Harris from ever achieving the size of force he needed to carry out the instructions he was given.<sup>44</sup> [emphasis in original]

The bomber offensive made possible a combat initiative that was deemed vital, not just for the damage it would cause the Third Reich but also for the galvanizing of both British and global support. It affected American and Commonwealth opinion as well as that of potential allies and enslaved nations, telegraphing British resolve to forcefully press home the fight against the tyranny of Nazism, alone if necessary. Its very prosecution assured Britain a pivotal say in the conduct of the war. It also did wonders for home-front morale, bolstering the British public in a time of great need for reassurance and hope. This evidence of commitment was never more important than after the German invasion of the Soviet Union during the summer of 1941. The bombing offensive constituted a second front, a significant source of relief to the beleaguered Soviets when no other offensive action was realistic or even possible. Later, bombing's contributions would become a prerequisite to the successful invasion of northwest Europe, "an independent campaign to pave the way for a combined arms invasion of Hitler's Europe."<sup>45</sup> From April until September 1944, the majority of Bomber Command's activities were conducted in lockstep with the preparation, execution and aftermath of the invasion through Normandy. And in the wake of this effort, the command would deal decisive blows to the enemy's

transportation and petroleum resources, effectively paralyzing the Third Reich in its final hours.

With respect to the charge that German war production actually increased after the start of the CBO, that is because

a state of total war was declared only after the German defeat at Stalingrad in February 1943 and production then went to a frantic 24-and-7 mode from what had been, at Hitler's direction, a relatively sedentary pace, since he was adamant that the military endeavours of the Reich





would not interfere with the consumer industries. And this vast acceleration of production was borne largely on the backs of millions of slave labourers dragooned into service from the occupied territories of the Reich. It is difficult to conceive of just what the Germans would have been able to accomplish had they *not* been forced into a very demanding industrial decentralization programme, had they *not* been forced to honour the bombing threats through so much bolstering of their homeland defences, had they *maintained* uninterrupted use and control of their production facilities, and had they *maintained* unimpeded use of their very diversified transportation networks.

## THE MORALITY ISSUE

As the late-war evidence of Nazi atrocities mounted, there developed a significant hardening of Allied sentiment to bring the German people so completely to their knees that they would never again contemplate bringing another holocaust down upon the world. This was reflected in the partial tactical use of strategic bombers during the push through Germany in the closing weeks. These actions served to reinforce the points that no citizen of the Third Reich was immune *to* or exempt *from* the bombing and that further armed resistance was futile. The deliberate demoralization of the enemy undoubtedly helped shatter the German will to resist, hastening the capitulation of German forces in the western urban centres and, thereby, saving many lives, both Allied and Axis.

The British had been the first of the two great Western democracies to engage the Axis forces, and they had been provided with many prior examples

of indiscriminate area bombing by Germany, including Warsaw in 1939; Rotterdam, London and many other British cities in 1940; then Belgrade, Yugoslavia and additional British urban centres in 1941 and 1942. Area bombing was really the only viable offensive tool available to the British at the time, and it served due notice to friends and foes alike that Britain *could*, and *would*, fight back. It provided offensive relief to the Soviets when no other form of concentrated, sustained attack upon the enemy was yet possible. Further, substantial and repeated feedback from intelligence sources inside the Third Reich indicated that the bombing was scoring telling blows. Much of this rationale was still applicable after the United States entered the war. Further, the Americans were exerting pressure upon their British partners to conclude the European war as expeditiously as possible and then to turn their combined attentions against the Japanese. The Americans also learned—both through associations with the British and from their own combat experiences—that their own bombing forces were also, in reality, “blunt instruments of destruction,” with little true precision-bombing capabilities. This, in spite of the long-fostered, mythological public stance that they could deliver munitions precisely and effectively in all weather conditions. Much of the present-day abhorrence of the wartime area-bombing strategy has been fuelled by the current propensity for viewing the campaign through the lens of *today’s* technological capabilities. While existing “smart” weapons can surgically demolish a specific room in a building without figuratively “rattling the china” in an adjacent room, such technology, taken for granted today, simply was not available during the Second World War.

Today, along with Randall Hansen, Margaret MacMillan and Robert Bothwell, there are others who continue to condemn the bombing. One of the most prominent recent examples is the British philosopher Anthony C. Grayling, who has implied a “moral equivalency” between the Allied strategic bombing campaign and the 9/11 (11 September 2001) attacks on the United States. Part of the problem, I believe, is a widespread current propensity to view historical decisions and the actions that resulted from them through the filtering lens of present-day sensitivities and technological capabilities. History can only be judged properly from within the context of the times during which it occurred. Hindsight invariably benefits from 20/20 clarity.

As to the frequently advanced argument, fatuous at best, that the Second World War was “Hitler’s war” and that 78 million Germans wanted no part of it, those attitudes were not much in evidence when Nazi legions were having their way with most of Eurasia during the first three years of the war. Nor is that argument of any consolation to the ghosts of the millions who were systematically exterminated in the death camps and elsewhere. Lost in much of the debate is the fact that Nazism was a thoroughly repulsive and evil force bent upon world domination. Public opinion surveys from the war confirm widespread support for the bombing. Neither politicians nor historians of the period challenged the policy extensively at the time. Further, there was very little questioning of the morality of the bombing during the war, and what little that did occur came primarily from isolated British religious leaders.

## THE LEGAL ISSUE

Although the Red Cross Convention on the Protection of Civilians in Wartime was agreed upon in Stockholm in August 1948, it was never formally ratified, and the matter has only been fully codified since 1977 in the wake of the Vietnam War, when the First Protocol to the Fourth Convention expressly forbade deliberate military attacks upon civilians. And it should be emphasized that this particular legislation was made possible largely by significant technological advances with respect to weapons delivery, which have, for the most part, rendered area bombing unnecessary.

## CLOSING THOUGHTS

Bomber Command played an essential part as a guarantor of Allied victory during the Second World War. It provided an offensive tool that took the fight to the enemy when none other was available, and it gave the citizens of the Allied nations hope and pride while it did so. It provided Britain and the Dominions, through its very prosecution, a political dimension by which it could influence the conduct of the war. It demanded a significant diversion of German resources away from the Eastern Front, thereby aiding the USSR in its part of the combined struggle. It struck substantial and unrelenting blows against enemy morale. It threw Germany’s broader war strategy into disarray, forcing it to adopt a reactive rather than a proactive stance though industrial decentralization, which placed unsupportable burdens on a transportation network that was already stretched to the limit. It delivered crippling blows to the enemy’s sophisticated and diverse

transportation network, and it generated a loss of German air superiority, along with doing much significant damage to the Reich's war industrial base. It eventually starved the nation of petroleum products, and it made the way safer for an Allied re-entry into northwest Europe in 1944. It effectively stymied German economic mobilization and technological development in many areas, and it goaded the Nazis into costly and ineffective retaliation campaigns, such as the V-1 and V-2 vengeance rocket programmes, at the expense of technologies with greater war-winning promise, such as the jet and rocket fighters and the Type XXI and XXIII U-Boats. Many military resources and personnel were diverted away from the fighting fronts just to honour the threats to the Reich, and massive amounts of manpower and material were needed to address the damage sustained by the bombing. While a great human price was paid for these accomplishments on both the combatant sides, in relative terms, the losses incurred to the Anglo-Americans were small when compared to those suffered elsewhere, such as in the USSR. And the overall cost was relatively low as a percentage of the total war effort, considering the gains that were realized. Wartime Bomber Command was a highly viable and effective fighting force, led with great dedication and purpose by a resolute and resourceful commander in Sir Arthur Travers Harris.

Dr. Peter Lee, a Portsmouth University Principal Lecturer in military leadership ethics, based at the Royal Air Force College Cranwell, and a former RAF chaplain summarized Sir Arthur Harris's tenure at the helm of wartime Bomber Command as follows:

If Bomber Command reduced the length of the war by one day how many Jews were saved? What if Bomber Command reduced the length of the war by a week? By a month? Such a grotesque numbers game can never be accurately completed and it would seem perverse to even try. However, these numbers remind us that when great evil stalked Europe and Britain had to take the fight to its Nazi enemy, Harris more than anyone else was prepared to embrace a lesser evil in order to defeat it. He never shirked from his task, never denied it, never apologized and never regretted his actions. Harris had blood on his hands and never tried to hide it, and it was this that singled him out as a scapegoat. Churchill wanted his legacy and many in the country wanted to forget what they demanded of Harris in the darkest hours when fear and danger were overwhelming. It is time we remembered Harris's role and moral culpability in its proper perspective and recall him from the wilderness.<sup>46</sup>

At this juncture, it is perhaps fitting that Harris's biographer, Probert, should have the last words on the man and his command.

So what of his achievements and those of the Command he led? For over three years he directed its immense build-up and endeavoured ceaselessly to ensure its efficiency; he inspired not just the aircrew but also the hundreds of thousands in other roles whose tasks were essential to its support; he fought endless battles on their part at many different levels of command; and he did his utmost to publicise and explain their work. At the same time, while always subject to the frequent directives he received

from above, he made virtually all the key operational decisions. On top of all this he gave unstinted help and encouragement to his United States colleagues—and in the process helped lay the foundations of the close ties between the Royal Air Force and the United States Air Force which have been of such importance ever since. True, there were disputes over policies and methods, not surprisingly with such a forceful, independently minded Commander-in-Chief. So, also not surprisingly, he had at times to be overruled, but once the arguments were over he obeyed his orders, and most notably when supporting the invasion operations and earning the undying gratitude of Eisenhower and his top-level commanders. It was over Harris's primary role, the bombing of Germany itself, that the main disputes arose, particularly in the final months of the war, yet while there will always be debate over specific targets which he selected at different times his total achievements and those of his Command are clear. They rightly took the war to the enemy in the only way possible in the earlier days, they and their American comrades-in-arms forced his air forces on to the defensive, which was all-important for the great sea and land campaigns waged by the Allies; they caused massive division of his resources of all kinds; and they steadily wrecked his economic structure. It was a unique offensive carried out in a unique war, and for his conduct of it Sir Arthur Harris deserves to rank among the great high commanders of modern history.<sup>47</sup> 🇨🇦

Lieutenant-Colonel David L. Bashow (Retired) has written extensively in books and select periodicals on a variety of defence, foreign policy and military history topics. His published books have been well received by academics and general readers alike, and most have achieved best-seller status. In 2004, he retired after 36 years of military service as an Air Force fighter pilot, a senior staff officer and a military academic. His flying time includes nearly 2400 hours in the CF104/F-104G Starfighter, and he is a graduate of the United States Air Force / German Air Force Fighter Weapons School and the United States Navy's Topgun at the postgraduate level. In 2002, he was appointed an Officer of the Order of Military Merit, and he has also received the United States Meritorious Service Medal. Dave has also received commendations from both the Canadian Forces and the United States Air Force for saving aircraft in extreme emergency situations. He is currently Editor-in-Chief of the *Canadian Military Journal* and an associate professor at the Royal Military College of Canada. His latest commercially available book is entitled *No Prouder Place: Canadians and the Bomber Command Experience 1939–1945*, and it represents more than five years of scholarship and research. It has received outstanding reviews and has already had a second printing. He has also been extensively involved in championing Canada's Bomber Command veterans in their struggles against the Canadian War Museum and what they believe was an unjust and inaccurate portrayal of their contributions to victory during the Second World War. This has included publication of several well-received opinion pieces and articles in prestigious journals and newspapers across the country and a





highly successful presentation to the Senate Sub-Committee for Veterans' Affairs in July 2007 on the issue. Dave has subsequently had two additional books dealing with the Second World War bomber offensive published by the Canadian Defence Academy Press in Kingston.

## ABBREVIATIONS

|                 |  |
|-----------------|--|
| <b>AOC-in-C</b> | Air Officer<br>Commanding-in-Chief                         |
| <b>CBO</b>      | Combined Bomber<br>Offensive                               |
| <b>PRO</b>      | Public Records Office                                      |
| <b>RAF</b>      | Royal Air Force  |
| <b>RLM</b>      | <i>Reichsluftfahrtministerium</i><br>(German Air Ministry) |
| <b>SHAEF</b>    | Supreme Headquarters<br>Allied Expeditionary Forces        |
| <b>USAAF</b>    | United States Army Air<br>Force                            |
| <b>USSTAF</b>   | United States Strategic and<br>Tactical Air Force          |

## NOTES

1. Edward Jablonski, *America in the Air War* (Alexandria, VA: Time-Life Books, 1982), 142.

2. Sir Martin Gilbert, *Finest Hour: Winston Churchill 1939–41* (London: Heinemann, 1983), 655–56.

3. Lord Portal, as quoted in Brereton Greenhous and others, *The Official History of the Royal Canadian Air Force*, vol. III, *The Crucible of War 1939–1945* (Toronto: University of Toronto Press, 1994), 539.

4. Ibid., 544.

5. Henry Probert, *Bomber Harris: His Life and Times* (Toronto: Stoddart, 2001), 54; and Richard Holmes, *Battlefields of the Second World War* (London: BBC Worldwide, 2001), 183.

6. Charles Webster and Noble Frankland, *The Strategic Air Offensive against Germany*, ed. James Butler, vol. 4, *Annexes and Appendices* (London: Her Majesty's Stationary Service, 1961), 144.

7. Air Historical Branch (AHB) Bomber Command Narrative, IV, 130, Directorate of History (Canada), File 86/286. Bottomly to Baldwin, 14 February 1942, quoted in Webster and Frankland, vol. 4, 143–45. Portal to Bottomley, 15 February 1942, as quoted in Charles Webster and Noble Frankland, *The Strategic Air Offensive against Germany*, ed. James Butler, vol. 1, *Preparation* (London: Her Majesty's Stationary Service, 1961), 324, as quoted in Greenhous and others, 576.

8. "Royal Air Force Bomber Command Official History," accessed May 15, 2005, <http://www.nucleus.com/twilight/bc-stats/html/> (site discontinued). Richard Overy's research closely mirrors these findings and acknowledges the diversified effort in many other areas. Other Bomber Command taskings included land operations, long-range reconnaissance, mine-laying, support to Resistance operations, attacks on communications centres and airfields as well as the war at sea. Richard Overy, *Bomber Command 1939–1945* (London: HarperCollins, 1997), 51. Still other diversions were designated precision attacks, propaganda (leaflet) raids, electronic warfare support as well as humanitarian and relief missions towards the end of hostilities. David L. Bashow,

*No Prouder Place: Canadians and the Bomber Command Experience 1939–1945* (St. Catharines, ON: Stoddart Publishing, 2005), 459.

9. Overy, *Bomber Command*, 80.

10. John Singleton, “Report on the Bombing of Germany to Prime Minister Churchill,” 20 May 1942, in Public Records Office (PRO) Premier 3/11/4, 124.

11. Air Intelligence Result of Recent RAF Attacks Report to Prime Minister, 23 September 1942, in PRO Premier 3/11/12, 621.

12. Air Intelligence Report No. 346 to Chief of the Air Staff, 22.9.42, in PRO Premier 3/11/12, 627–29.

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14. Webster and Frankland, *The Strategic Air Offensive*, vol. 4, 153–54.

15. Probert, 306.

16. *Ibid.*, 292.

17. Franklin D’Olier and others, *The US Strategic Bomb Survey – Overall Report – European War – September 30, 1945* (Washington: US Government Printing Office, 1945), 62.

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19. Martin Middlebrook, “Bomber Command: The Turning Points,” *Flypast* no. 209 (December 2006): 85. Ancillary data from Williamson Murray, *Strategy for Defeat: The Luftwaffe 1933–1945* (Secaucus, NJ: Chartwell Books, 1986),

178; and John Terraine, *The Right of the Line: The Royal Air Force in the European War 1939–1945* (London: Hodder and Stoughton, 1985), 678–79.

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21. Richard Overy, “Are We Beasts?” *Literary Review* (March 2007), accessed November 4, 2013, [http://www.literaryreview.co.uk/overy\\_03\\_07.html](http://www.literaryreview.co.uk/overy_03_07.html).

22. Gee was the code name given to a radio navigation system used by the RAF during WWII. Originally designed as a short-range blind landing system to improve safety during night operations, it developed into a long-range general navigation system. “Gee (navigation),” Wikipedia, accessed November 4, 2013, [http://en.wikipedia.org/wiki/GEE\\_\(navigation\)](http://en.wikipedia.org/wiki/GEE_(navigation)). Officially the AMES Type 100, the Gee-H was a radio navigation system developed during World War II to aid Bomber Command. “Gee-H (navigation),” Wikipedia, accessed November 4, 2013, [http://en.wikipedia.org/wiki/Gee-H\\_\(navigation\)](http://en.wikipedia.org/wiki/Gee-H_(navigation)).

23. “A British, aerial, blind-bombing targeting system in World War II, based on radio transponder technology.” “Oboe (navigation),” Wikipedia, accessed November 4, 2013, [http://en.wikipedia.org/wiki/Oboe\\_\(navigation\)](http://en.wikipedia.org/wiki/Oboe_(navigation)).

24. Bill Swetman, “Avro Lancaster,” in *The Giant Book of World War II Airplanes*, ed. Jeffrey L. Ethell (Tokyo: Zokeisha Publications, 1984), 417–18.

25. The American development of the British H2S radar. It was used by

USAAF in WWII for daylight overcast and night-time operations. "H2X radar," Wikipedia, accessed November 4, 2013, <http://en.wikipedia.org/wiki/H2X>.

26. Robin Neillands, *The Bomber War: The Allied Air Offensive against Nazi Germany* (New York, Overlook Press, 2001), 293.

27. Probert, 320; and Group Captain Peter Gray, "Dresden 1945: Just Another Raid?," *Royal Air Force Airpower Review* 4, no. 1 (Spring 2001): 5.

28. For a more detailed discussion of the Dresden raids, including the justification, the results and recently revised civilian casualty estimates, see David L. Bashow, *None but the Brave: The Essential Contributions of RAF Bomber Command to Allied Victory during the Second World War* (Kingston, ON: Canadian Defence Academy Press, 2009), 151–53 and Chapter 3 Notes 85–88.

29. Charles Webster and Noble Frankland, *The Strategic Air Offensive against Germany*, ed. James Butler, vol. 3, *Victory* (London: Her Majesty's Stationary Service, 1961), 112.

30. Neillands, 373.

31. Ibid., 372.

32. For an extensive discussion of this issue, including the offending minute and its eventual replacement, see David L. Bashow, *Soldiers Blue: How Bomber Command and Area Bombing Helped Win the Second World War* (Kingston, ON: Canadian Defence Academy Press, 2011), 55–61 and Notes 89–98.

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35. H. P. Willmott, *The Second World War in the Far East*, ed. John Keegan (London: Cassell, 1999), 198.

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37. Transcribed by author during a visit to the Hiroshima Peace Museum, Hiroshima, Japan, 15 July 2002. The War Cabinet, apparently figuratively, was calling for the sacrifice of every Japanese man, woman and child, if necessary, to repel the invaders from the west, since the *total* population of Japan, as late as April 1947, was just over 73 million.

38. Jablonski, 169. Peter Jennings and Tod Brewster, *The Century* (New York: Doubleday, 1998), 276. The Allied Potsdam Declaration of 26 July 1945 called unequivocally for the "unconditional surrender" of Japan, but on 31 July, Emperor Hirohito made it clear that the Imperial Regalia of Japan (i.e., the royal throne) had to be defended at all costs. "Atomic Bombings of Hiroshima and Nagasaki," access date not provided, [http://en.wikipedia.org/wiki/Atomic\\_bombings\\_of\\_Hiroshima\\_and\\_Nagasaki](http://en.wikipedia.org/wiki/Atomic_bombings_of_Hiroshima_and_Nagasaki) (content updated). Also, Koichi Kido, Yoshitake Oka, and Kido Nikki Kenkyūkai, *Kido Koichi nikki* (Tokyo: Daigaku Shuppankai, 1966), 1120–21.

39. Giangreco, 110, Note 38. A third atomic weapon was going to be available by mid-August, and 8 or 9 of them were to be available for planned battlefield *tactical* use during the invasion of Kyushu in November, along with the planned use of poison gas. Ibid., 201–2.

40. Overy, *Bomber Command*, 200.
41. D'Olier and others, 71.
42. For a detailed discussion, see Bashow, *None but the Brave*, 144–47.
43. Albert Speer, *Inside the Third Reich* (New York: Galihad, 1970), 286; and Joachim Fest, *Speer: The Final Verdict* (London: Weidenfeld & Nicholson, 2001), 166–67.
44. Neillands, 301.
45. Overy, *Bomber Command*, 183.
46. Peter Lee, “Return from the Wilderness: An Assessment of Arthur Harris’s Moral Responsibility for the German City Bombings,” *Royal Air Force Air Power Review* 16, no. 1 (Spring 2013): 86.
47. Probert, 414.



# BOOK REVIEWS

## From the Skies of Germany to the North African Desert: The Royal Canadian Air Force at War, 1939–1945

Review by **Commander Mark R. Condono**, Philippine Coast Guard Auxiliary

### FLYING UNDER FIRE: CANADIAN FLIERS RECALL THE SECOND WORLD WAR



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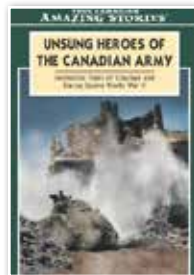
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### UNSUNG HEROES OF THE ROYAL CANADIAN AIR FORCE: INCREDIBLE TALES OF COURAGE AND DARING DURING WORLD WAR TWO



By Cynthia J. Faryon

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ISBN 1-55153-977-2

**N**ine days after Germany's invasion of Poland on 1 September 1939, Canada would heed Great Britain and the other Commonwealth nations with a declaration of war against Germany. This string of events would mark the escalation of the Second World War. As it was during the Great War, Canadian mobilization was stepped up as the threat of Axis domination increased. After an initial build-up and

rearming of the armed forces, the squadrons of the Royal Canadian Air Force (RCAF) would fly alongside their Royal Air Force (RAF) counterparts in every theatre of conflict, from the skies of Great Britain and Europe, the Mediterranean and North Africa on through the jungles of Southeast Asia. The RCAF squadrons conducted various missions from photo reconnaissance and close air support to antisubmarine warfare against the German and Japanese navies in both the Atlantic and Pacific oceans.

The story of the RCAF's participation during the Second World War is again brought to light by two notable historians of aviation history. The first two volumes discussed here are edited by the prolific aviation author, William J. Wheeler (*Skippers of the Sky* and *Images of Flight*). They cover the experiences of Canadians serving in the RCAF and RAF during the turbulent years of 1939 to 1945. The stories previously appeared in the *Canadian Aviation Historical Society Journal*, which was also edited by Wheeler, one of the founders and a key officer of the society. The third book is written by Cynthia J. Faryon, a western Canadian author whose diverse works cover topics on national history, travel and family issues.

*Flying under Fire: Canadian Fliers Recall the Second World War* spearheads the trio as it recounts 12 aviation stories from RCAF personnel, from flying the Avro Manchester bomber to night-intruder missions over Germany. Notable among the subjects here is celebrity and music bandleader Jackie Ray, a flight lieutenant who flew the ubiquitous Spitfire during the Dieppe operation and finished the war having been awarded a Distinguished Flying Cross (DFC). We then soar over the Mediterranean with torpedo bomber pilot Murray Hyslop as his Bristol Beaufighter dodges heavy anti-aircraft fire from German and Italian warships. A few pages further and Air Transport Auxiliary (ATA) Officer Vi Warren recounts her entry into the ATA and the numerous ferry flights

she made with various aircraft types from Mosquito bombers to the Westland Welkin Interceptor. Lastly, we have a grand view of the airstrike against the German battleship *Tirpitz* over the Norwegian fjord by the famous 617 "Dambuster" Squadron through the cockpit memories of Squadron Leader Donald Bell.

*More Aviation Tales from the Second World War* comprises the second volume of *Flying under Fire*, this time recounting 10 stories of Canadians at war. In the ensuing pages, readers meet Squadron Leader Martin Cybulski, a night fighter pilot and a recipient of the DFC whose exploits flying missions over enemy territory are remarkable. From Europe, we proceed to North Africa with Squadron Leader James Collier flying P-40 Kittyhawks against the Luftwaffe and *Reggia Aeronautica Italiana* (Italian Royal Air Force) to escort Prime Minister Winston Churchill on one of his frontline visits and onto becoming the first RCAF pilot to bring down a *Messerschmitt* (Me) 262 jet fighter. Next, Flight Lieutenant John Winship, DFC, takes the reader on a photo reconnaissance mission over Japanese-held Burma; notable in this chapter is his long-range flight from Britain to India. Subsequently, another significant account is that of retired Lieutenant-General William Carr, who flew as a Spitfire photo-reconnaissance pilot with an RAF squadron during operations in Malta and Italy.

*Unsung Heroes of the Royal Canadian Air Force* is divided into 12 chapters. It commences with a prologue in which the author meets one of the characters whose story is featured in the book, that of Flying Officer Kenneth Moore who recalls his years as a pilot of a B-24 Liberator bomber over Germany. Other notable accounts within the tome are that of Flying Officer William Maclean, a Lancaster bomber skipper who heroically saved his crew when their aircraft was hit by anti-aircraft fire over Wiesbaden and of Squadron Leader Edward Blenkinsop who, after being shot down on one of the bomber offensives in 1944,

would join the resistance in Belgium and wage harassing attacks against Axis positions in the area. Another remarkable personality and a heroine is Ms. Dedee de Jongh, who helped hundreds of downed Allied airmen to cross into friendly lines via a mountainous trek to Spain. Lastly, readers are treated to a retelling of the valiant engagement between an RCAF B-24 Liberator bomber flying antisubmarine missions against the German submarine *U-373*.

Faryon is to be lauded for these fine, stirring accounts. The individual stories furnished by the fliers provide a perspective from their generation, a time in which freedom had a high price. It captures their hopes and, more importantly, highlights both their patriotism in serving their country amidst the dangers they encountered while in their cockpits as well as the strong bonds of friendship they established with each other.

The first two books are supported by over 50 photos each, along with sketches of the combat aircraft flown by the service. Both are supplemented with detailed glossaries, a listing of Canadian aviation museums and an index. Faryon's volume is documented with four photos, a map and a bibliography. These books provide a valuable addition in the popular historiography of Canadian military aviation, specifically, and the Second World War, in general, and should be welcomed by lay people; for the younger generation, these works might serve as an inspiration to delve further into Canadian military history as a means to discover what their forefathers did to preserve the freedom that we enjoy today. 🇨🇦

Commander Mark R. Condono, Philippine Coast Guard Auxiliary (PCGA) is currently dual-hatted as Liaison Officer, Foreign Armed Forces Attaché Corps, International Affairs Directorate, PCGA and Command Historian stationed in Manila. He holds a Bachelor of Science Degree in Architecture from Palawan State University. He was with the Class of 1997 of the Basic Naval Reserve Officer Training Course, Philippine Navy and

was a member of the Philippine Coast Guard Auxiliary Officer Indoctrination Course class of 1999.

## Abbreviations

|             |                                  |
|-------------|----------------------------------|
| <b>ATA</b>  | Air Transport Auxiliary          |
| <b>DFC</b>  | Distinguished Flying Cross       |
| <b>PCGA</b> | Philippine Coast Guard Auxiliary |
| <b>RAF</b>  | Royal Air Force                  |
| <b>RCAF</b> | Royal Canadian Air Force         |

## PROUD TO BE: MY LIFE, THE AIR FORCE, THE CONTROVERSY



By Kelly Flinn

New York: Random House, 1997  
259 pages  
ISBN 0-375-50109-8

Review by **Captain Liz Allard, CD**

**T**he United States Air Force lifted its ban on women becoming pilots in the 1970s; however, it was not until 1991 that Congress lifted the ban on women flying in combat aircraft. Integrating into their squadrons was challenging during this period; they not only faced hostility by those who felt they did not belong but also became the focus of much media scrutiny as they became the first women to accomplish each milestone. *Proud to Be* is the autobiography of Lieutenant Kelly Flinn, who was one of these ground-breaking female pilots and quickly fell from grace as a result of adultery and conduct-unbecoming charges.

Flinn's story begins with her childhood and takes the reader through her Academy days, pilot training and her time on squadron at Minot Air Force Base, at which time she becomes involved with a man who is married to an Air Force enlisted member. As the story progresses, a number of themes become

apparent and are highlighted by the chapter titles that Flinn selects (“Playing to Win,” “Learning to Keep Quiet” and “Poster Girl”).

The first theme is the strength and drive that Flinn develops as a result of growing up with brothers and sisters who were considerably older, as she had to wrestle a brother to have control of the television programming and play sports with them at their level. This strength prevails throughout the book and is seen in her success at high school, in her scholastic achievements at the Air Force Academy and throughout pilot training. Flinn cites the awards she received and positive proficiency report comments made by her pilot training officers as evidence of the success of her hard work and drive.

The second theme that surfaces is that of mistrust of the military leadership system; it began during her recount of an assault incident at the end of her Academy freshman year. Discouraged to report it by her room-mate (who was also assaulted at the same time) and a male classmate friend, Flinn lived alone with this experience until second year when she sought counselling. According to Flinn, the counsellor was more concerned about Flinn drinking underage (a glass of wine with her parents) than the assault incident and threatened to report the former to Flinn’s chain of command. Other examples are cited throughout the remainder of Flinn’s stay at the Academy where the victims were forced into silence or ostracized for reporting a wrong doing.

This theme prevails throughout the book and is evident during the investigations into the accusations of adultery. It certainly appears that Flinn delayed getting the proper advice and guidance from military lawyers and counsellors as she tried to deal with the situation herself. Unfortunately, when she finally turned to her chain of command, it seemed more interested in washing their hands of the situation and moving it to higher authority, which sought the harshest punishment for the offence.

Flinn’s selection of the B-52 Stratofortress strategic bomber put her into the media limelight because she was to be the first female pilot of that aircraft. As mentioned, Congress had only recently opened combat positions to women, and the media was covering all the “firsts” for this group of individuals. Thus, the third theme is the unwanted special treatment—which alienated her from her male counterparts—that began as soon as she made her selection and continued after her arrival at Minot Air Force Base. Very shortly after her arrival on squadron she was handpicked to be part of the “show crew,” which meant that she received a lot of plum flying assignments and was tasked to fly the Secretary of the Air Force, Sheila Widnall, on a mission. Also, instead of being assigned to a regular crew during her on-job training period, Flinn was bounced around, flying with most of the colonels on the base. Flinn admitted that the increased attention and lack of consistent training adversely impacted her flying, and it wasn’t until one of the instructors intervened that Flinn regained her confidence and flying skills.

The final theme that prevails throughout the entire book is Flinn’s social and love life, or the lack thereof. She admits that she focused her attention on getting into the Academy through most of high school, which meant that she did not do the normal dating and socializing that teenagers tend to do. Flinn indicated confusion at the Academy situation of having a large number of randy teenagers living in close quarters and then telling them it is against the rules to have sex. The Honour Code at the Academy and the need to protect one’s back within the corps of cadets both hindered the development of any type of normal relationship during that period. On a number of occasions, Flinn indicated that the Air Force Academy and the Air Force itself did not prepare her for having normal social relationships. From the comments made throughout the book, it appears that Flinn certainly lacked maturity.



When it comes to describing the events of the investigation into her adultery and conduct-unbecoming charges, the reasoning for the four themes becomes apparent. To this reader, they appear to be the excuses she provides for how she got herself into the mess she did. Flinn devoted her energies to succeeding at school and in the military, which left her little time to develop socially. Indicating that the Academy and Air Force did not prepare her for social relationships appears to be a ruse to deflect some of the responsibility off her shoulders and onto the military's. Flinn uses the poster-girl theme to illustrate how she became marginalized from her squadron mates because of the extra attention, which she implies contributed to her social-life dilemmas. The mistrust of military leadership garnered after a number of bad experiences throughout her career certainly caused her to be gun-shy when it came to dealing with the investigation against her.

Whether Flinn was unfairly railroaded is certainly up for conjecture. If the timelines and information presented in her book are accurate, then it certainly appears that may be the case, particularly with the lack of support she received from her chain of command almost from the outset as well as the speed and efficiency Flinn indicated they processed her release—something that normally takes weeks, not days. On the other hand, Flinn knew the rules and chose to ignore them or bury her head from the truths. Her lack of maturity and, in many respects, honesty in dealing with some of the issues she faced makes it hard to find sympathy.

*Proud to Be* is easy reading and a great summertime, feet-up book to occupy a few hours. The subject was particularly poignant, considering that a recent Congressional report estimates that 26,000 troops were sexually assaulted (everything from groping to rape) in 2012, an increase of 37 per cent from 19,000

in 2010.<sup>1</sup> Even more disconcerting, “only 3,400 attacks were reported”<sup>2</sup> in 2012, and currently, “less than 1 percent of the predators [are] convicted.”<sup>3</sup> In the 20 years since Flinn graduated from the Air Force Academy it certainly does not appear that much has changed in the American military culture. Flinn's story illustrates both the decision-making pitfalls young officers are capable of and the inappropriate leadership decisions made by those in positions of authority. Those who wish to learn from the mistakes of others should add *Proud to Be* to their reading list. 🇨🇦

Captain Liz Allard, CD, a CC130 air combat systems officer, is currently stationed at the Canadian Forces Aerospace Warfare Centre as the Information Management Officer. She has a degree in Political Science and has twice deployed to Haiti with Canada's Disaster Assistance Response Team.

## Notes

1. United States, Department of Defense, *Department of Defense Annual Report on Sexual Assault in the Military: Fiscal Year 2012, Volume 1* (Washington, DC: Department of Defense, May 3, 2012), 13, accessed August 16, 2013, [http://www.sapr.mil/public/docs/reports/FY12\\_DoD\\_SAPRO\\_Annual\\_Report\\_on\\_Sexual\\_Assault-VOLUME\\_ONE.pdf](http://www.sapr.mil/public/docs/reports/FY12_DoD_SAPRO_Annual_Report_on_Sexual_Assault-VOLUME_ONE.pdf).

2. PBS Newshour, “Does the Pentagon's Plan Do Enough to Curb Sexual Assault in the Ranks?” PBS.org, accessed August 16, 2013, [http://www.pbs.org/newshour/bb/military/july-dec13/military\\_08-15.html](http://www.pbs.org/newshour/bb/military/july-dec13/military_08-15.html).

3. Ibid. This statistic is provided by Susan Burke, a lawyer who specializes in defending women in military sexual assault cases and is disputed by Major General John Altenburg (Retired), who when he retired in 2001 was the second-highest-ranking lawyer in the Army.

# Royal Canadian Air Force Operational-Level Education: An Update



CF Photo: Hope Smith

**By Lieutenant-Colonel John R. Anderson, CD**

In the spring of 2011, the Canadian Forces Aerospace Warfare Centre (CFAWC) offered the first air component commander (ACC) seminar, a one-week programme designed to strengthen the understanding of operational-level command and control (C2) within the Royal Canadian Air Force (RCAF). Since that time and in keeping with the CFAWC motto—*Agile*, we have

undertaken a continuous cycle of adaptation, modification and improvement. The final serial in its current format was conducted at CFAWC Trenton, 15–19 April 2013.

Based on feedback received and lessons learned during exercises and operations, this final instalment followed a similar path to previous serials. In addition to some initial

general briefings on command, C2, operations planning and an overview of the combined air operations centre (CAOC) processes, briefings on aspects of Sense, Act and Sustain doctrine were provided. The seminar audience then participated in a domestic-operations scenario—based on a table-top war game that has been developed around the B-GA-401-000/FP-001, *Canadian Forces Aerospace Command Doctrine* to include C2 processes and operations planning—two new components that will be incorporated in edition 2 of the publication, scheduled for this year.

The seminar audience was then divided into two groups. The first focused on logistics planning considerations. The second group focused in more detail on the roles, responsibilities and processes of the CAOC's divisions as well as the products of the air tasking cycle. The Joint Force Air Component Commander (JFACC)—Major-General St-Amand—engaged the seminar audience via video teleconference (VTC) to provide his commander's intent for deployed C2.

The second group then continued playing the next two war-game scenarios—an expeditionary Canadian joint-task-force operation and a Canadian contribution to a coalition joint-task-force operation. Each scenario had four vignettes, most of which are based on actual situations that have been drawn from lessons learned during recent exercises and operations, to provide planning and decision-making challenges for the seminar audience. The first group continued with the considerations for logistics planning.

Both groups reconvened for the final day to address target engagement authority and “red card holder” subject matter. The final day was concluded with a series of scenarios and vignettes that were conducted using the Air Exercise (AIREX)—a tailorable operational-level C2 exercise conducted in the synthetic environment.

The purpose of the seminar has been to provide a level of knowledge and understanding of the full range of responsibilities of command, plan, task, execute and assess



CF Photo: Hope Smith

that an ACC or air command and control element (ACCE) director and the operational staff, air operations centre or ACCE would require as the deployed C2 for the JFACC/CAOC in exercises or on operations. Given the range—scope and scale—of expectations for deployed C2, the commanders of 1 and 2 Canadian Air Divisions directed that a training needs analysis (TNA) be conducted to determine more precisely what education/training ought to be provided.

The TNA resulted in the draft qualification standard for the next evolution of the seminar: the RCAF Operations Command and Control Course (OCCC). The pilot course was conducted in November 2013. CFAWC will continue to deliver this graduate-level course in a seminar format, leveraging the table-top war game to focus on decision making for the operational-level deployed leadership teams which include air task force commanders, air component commanders and air component coordination element directors and their deputies. The CFSAS Air Force officer Development (AFOD) Block 5 will continue to generate knowledgeable staff

to work within their deployed air task force headquarters or air component headquarters.

CFAWC will also continue to develop the AIREX to provide a means of exercising this RCAF deployed C2 in a variety of scenarios, contributing to the 1 Canadian Air Division managed readiness programme.

The combination of the RCAF OCCC, AFOD Block 5 and AIREX will give the Air Force an opportunity to better prepare for potential force employment at the operational level within either a Canadian joint task force or a coalition combined joint task force, thus effectively contributing to RCAF operational-level education. In order to ensure a broad and thorough understanding of all aspects of the operational level, CFAWC is also developing additional modules for inclusion in the table-top war game based on each of the B-GA-400 series doctrine manuals. Using lessons learned to shape future seminars and AIREX content closes CFAWC’s Observe, Orient, Decide, Act (OODA) loop, see Figure 1, bringing “what is” closer to “what ought to be.”

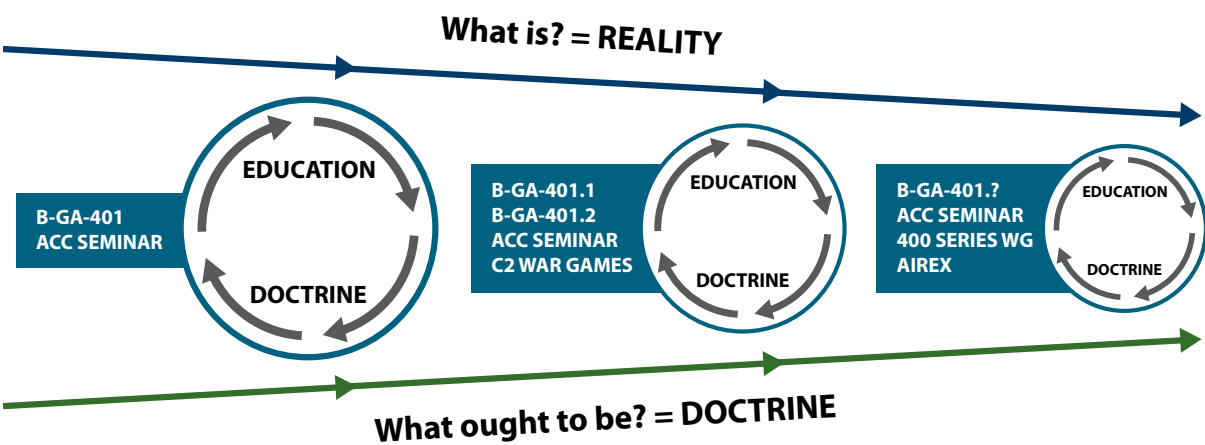


Figure 1. CFAWC OODA Loop



Lieutenant-Colonel John Anderson is an air combat systems officer (ACSO) with two tours flying fighters and electronic-warfare aircraft, and three tours flying tactical airlift on CC130s. He has experience as a project director for a variety of electronic-warfare projects and was a member of the directing staff at the Canadian Forces College for four years. He is currently responsible for education and specialty training at the Canadian Forces Aerospace Warfare Centre.

## Abbreviations

|              |   |
|--------------|---|
| <b>ACC</b>   | air component commander                     |
| <b>ACCE</b>  | air command and control element             |
| <b>AFOD</b>  | Air Force Officer Development               |
| <b>AIREX</b> | Air Exercise                                |
| <b>C2</b>    | command and control                         |
| <b>CAD</b>   | Canadian Air Division                       |
| <b>CAOC</b>  | combined air operations centre              |
| <b>CFAWC</b> | Canadian Forces Aerospace Warfare Centre    |
| <b>CFSAS</b> | Canadian Forces School of Aerospace Studies |
| <b>JFACC</b> | joint force air component commander         |
| <b>OCCC</b>  | Operations Command and Control Course       |
| <b>OODA</b>  | observe, orient, decide, act                |
| <b>RCAF</b>  | Royal Canadian Air Force                    |
| <b>TNA</b>   | training needs analysis                     |



CF Photo: Hope Smith

# Terminology Talk

## {Article 5}

By Major James Bound, CD, BSc (Hons)

### Effects

#### Background

*Concise Oxford English Dictionary*

**effect, n.**

1. A change which is the result or consequence of an action or other cause.

#### Introduction

**M**ilitary forces seek to frame the desired outcomes of operations and activities in terms of *effects* to be created in order to achieve objectives. According to the schematic that illustrates the “cycle of life” for the Royal Canadian Air Force (RCAF) functions, only the Act function creates effects, and specifically air effects (see Figure 1).

It has been stated by some that the RCAF has a function-based doctrine framework. Others have called it an effects-based doctrine framework. Are either of these assumptions correct, and if not, what is the RCAF doctrine framework based on? This article will attempt to bridge the gap between how the military concept of *effects* can be linked to a doctrine framework and whether this understanding is compatible with that definition which appears in the *Concise Oxford English Dictionary* (COD). Do all of the RCAF functions produce *effects*? Let’s take a closer look.

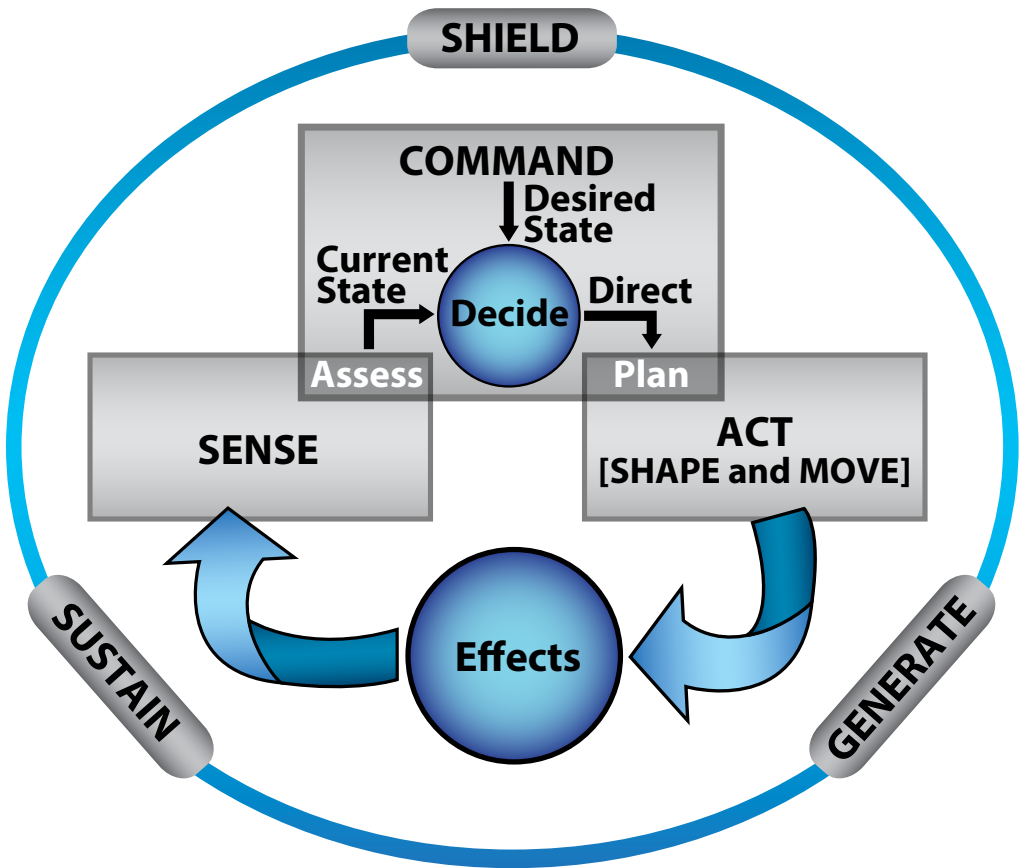


Figure 1. The RCAF functions

### Discussion

The rationale for focusing on effects is based on a perceived necessity to quantify the outcomes of military operations and activities with measures of effectiveness and to categorize them into thematic groupings (the RCAF prefers *domains*, while the Canadian Army uses *planes*). With this in mind, the quantification and categorization of effects morphed into a new way of thinking about how military operations should be conducted. The *Defence Terminology Bank (DTB)* contains the key terms that illustrate how the concept of *effects* has evolved in a military context, as follows:

Record 503

#### effect

The physical or cognitive consequences of action. (Department of National Defence [DND] / Canadian Forces [CF], 2008)

Record 32281

#### measure of effectiveness

A criterion used to evaluate how well a task has achieved the desired result. Note: This criterion focuses on the results or consequences of actions taken, considering whether the right things are being done to create the desired effects. (DND/CF, 2009)

Record 35089

### effects-based approach

The way of thinking and specific processes, integrated in both the physical and psychological planes that focus on desired outcomes (effects) rather than activities to enable both the integration and effectiveness of the military contribution within a comprehensive approach and the realization of operational and strategic outcomes.

Note: The specific processes involve the organization of activities to achieve planned, desired and measurable effects that will realize objectives and ultimately meet the mission end state. (Chief of the Land Staff, 2009)

Record 35105

### effects-based thinking

Philosophy that deals with the situation as a whole and the changes that need to be made to physical and cognitive elements to secure a favourable outcome. (Chief of Force Development, 2009)

United States' doctrine defines *effect* as:

1. The physical or behavioral state of a system that results from an action, a set of actions, or another effect.
2. The result, outcome, or consequence of an action.
3. A change to a condition, behavior, or degree of freedom.

Source: (Department of Defense [DoD]) Joint Publication 3-0, 2011)

The *COD* definition for *effect*, “a change which is the result or consequence of an action or other cause,” is inconsistent with the *DTB* definition of the term, in that the latter may fall short when considering how effects can be created in order to achieve specific outcomes. Specifically, perhaps an effect can

be created without any action at all, or can prevent an action from occurring, such as through positioning an aircraft carrier in an area of operations without commencing any air operations. Indeed, the main goal of an information operations activity is generally to create an effect without linking it to direct action; such an effect would be defined as non-kinetic: “Said of non-destructive means to achieve desired effects. (*DTB* record 43729, Chief of the Air Force Staff, 2011)”

Another problem with the *DTB* definition of *effect* is that the phrase “physical or cognitive consequences” does not take into consideration the consequences that a cyber<sup>1</sup> attack can achieve. In the new age of cyber warfare, “information consequences” now have to be considered. By either leaving the *DTB* definition open-ended (i.e., not being specific as to which consequences are used) or incorporating information consequences explicitly, the *DTB* definition of *effect* could be revised. However, if the former course of action is preferred, the *COD* definition, “a change which is the result or consequence of an action or other cause,” would seem to be a better fit than the *DTB* definition. In this case, if the *COD* definition suffices then a unique *DTB* definition is not required.

### Impact on doctrine

The *COD* definition for *effect* is validated by Figure 1 and vice versa. However, if we want to retain terminological correctness while at the same time preserve the spirit and intent of Figure 1, then the “Effects” step in the illustration should be renamed “Air-Power Effects.” This minor modification does not change the fact that only the Act function can create air-power effects.

### Impact on the Aerospace Doctrine Framework

For a doctrine framework to be “effects based,” it would have to be organized along the lines of the domains in which effects can be created. In this case, there would be three keystone doctrine categories that





align with the three effects-based domains of **physical, psychological** and **information**.<sup>2</sup> Similarly, if the framework is function-based, then it would be organized along the lines of aerospace functions. As per B-GA-400-000/FP-000, *Canadian Forces Aerospace Doctrine*, the latter structure has been implemented in the RCAF, so it can be concluded that the aerospace doctrine framework is function based. As a point of perspective, the CF joint doctrine framework is consistent with that of the North Atlantic Treaty Organization (NATO), whose doctrine framework is aligned with the continental staff system.<sup>3</sup> The key finding is that RCAF operational-level doctrine is not effects-based doctrine. Our function-based doctrine describes how the RCAF organizes itself to provide the means to create effects, not the effects themselves.

### Summary

As a more open-ended definition, the *COD* definition for *effect*, “a change which is the result or consequence of an action or other cause,” is more accurate than the existing *DTB* definition. If the latter were to be revised to be more specific to a military context, then it would have to incorporate the concepts of “information consequences” to an action and that an effect can occur without a direct action related to military power. However, the *COD* definition for *effect* is compatible with Figure 1 and the aforementioned caveats and confirms the understanding that only the Act function produces air-power effects. Finally, the understanding of what constitutes effects-based thinking reaffirms the fact that the RCAF doctrine hierarchy is not effects based but function based. 🌐

Major James Bound, CD, BSc (Hons), is a navigator with 5,200 hours on the CC130 Hercules. In addition to two line tours on operational search and rescue squadrons, he has had multiple tours at the Air Mobility operational training unit as a flight instructor and aerospace systems evaluator. Major Bound is currently working in the Air Power Knowledge Development Branch at the Canadian Forces Aerospace Warfare Centre. His primary duties include the development of air electronic warfare doctrine and policy and the coordination of RCAF electronic warfare test and evaluation.

### Abbreviations

|      |  |
|------|--|
| CF   | Canadian Forces                          |
| COD  | <i>Concise Oxford English Dictionary</i> |
| DND  | Department of National Defence           |
| DTB  | <i>Defence Terminology Bank</i>          |
| NATO | North Atlantic Treaty Organization       |
| RCAF | Royal Canadian Air Force                 |

### Notes

1. Cyber: relating to information technology, the Internet, and virtual reality. (*COD*)
2. In recent doctrinal debates, “psychological” is becoming accepted as a more suitable term in place of either “moral” or “cognitive.”
3. Although the joint doctrine framework is consistent, the doctrine itself may not be. NATO doctrine is based on a comprehensive approach to operations, not effects based. Ref: NATO AJP-01(D), *Allied Joint Doctrine* (December 2010), paras 0227–0232.

# AIRMINDEDNESS:

## An Essential Element of Air Power

By Brigadier-General Christopher J. Coates, OMM, MSM, CD, MSS

*Author's notes:*

1. The author would like to acknowledge the editorial assistance of Colonel (Col) Chuck Oliviero (Retired), PhD, and Dr. Randall Wakelam.
2. The term *airmindedness* continues to be written as a compound word in two manners, both with and without the hyphen. The version without the hyphen will be the standard used in this article; although when quoting others, the original form will be retained.
3. In allied publications, the term "airmen" refers to both men and women serving in the respective air force.

***The history of mankind is the history of thought—of the gradual ascendancy of mind over matter: the subjugation of brute force by intelligence.<sup>1</sup>***

— B. H. Liddell Hart, 1944

### INTRODUCTION

Air power has made significant contributions to most recent military operations and has contributed to the full range of Canadian Forces (CF) operations since the late 1980s, coinciding with the end of the cold war and the advent of peace-enforcement and other contemporary operations. Most readers would be familiar with the contributions of air power, but in the Balkans alone these have ranged from supporting embargoes on maritime shipping to maintaining critical supply lifelines into Bosnia, to participating in the North Atlantic Treaty Organization's (NATO) Kosovo mission.

Most recently, throughout the decade of operations in Afghanistan, air power has played a significant role. Although initially limited to air mobility, both inter- and intra-theatre, CF air power eventually grew over time to encompass a wider range of air capabilities, including the delivery of intelligence, surveillance and reconnaissance as well as tactical mobility and firepower. Canadian combat forces in Afghanistan integrated the full spectrum of allied air power into their operations.

In addition, the Royal Canadian Air Force (RCAF) was a principal contributor of air power to many aspects of NATO's operations against Libya. Furthermore, air power has played a key

role in domestic operations, including search and rescue, maritime and Arctic surveillance, continental air defence operations and the provision of air security for critical national events. Air power, including CF air power, provided significant benefits during disaster recovery operations at home and in support of international humanitarian assistance operations, such as those in Haiti after the devastating earthquake in 2010.

In the wake of these important operational activities, there is an opportunity to examine some elements of doctrine to ensure that the CF and RCAF learn from these experiences and are better positioned for the future. The operations of the last decade have involved airmen and airwomen in a wide range of operations and have presented non-Air Force personnel with robust exposure to air power, in both planning and execution. Canada needs to appropriately prepare members of the RCAF and others to apply air power to achieve the desired effects, and that can only happen with a fundamental understanding and appreciation of its use. In their doctrine, Canada's allies—the United States (US) and the United Kingdom (UK)—recognize the uniqueness of the airman's expertise, and in the United States Air Force (USAF), it is termed "airmindedness."<sup>2</sup> Canadian doctrine does not address this notion of airmindedness

or the aviator's particular expertise, but in light of the significant recent use of air power, it is appropriate and beneficial for both the RCAF and CF to examine the concept of airmindedness.

This article will provide a critical examination of airmindedness, both within the RCAF and the greater CF through four major steps: discussing the notion of airmindedness; examining the current state of airmindedness; proposing a Canadian version of airmindedness; and finally, discussing the formal development of airmindedness in a Canadian context. In addition to my personal experiences, the ideas are the result of interviews conducted with a wide range of senior, experienced military personnel from Canada as well as our American and British allies. It is not a comprehensive academic examination of the notion of the subject, but it will occasionally refer to others who have made such an examination.

### THE NOTION OF AIRMINDEDNESS

*To them that come after us it may be as ordinary to buy a pair of wings to fly into remotest regions, as now a pair of boots to ride a journey.*<sup>3</sup>

— John Glanville, 1641

Writers of the 1920s initially coined the term airmindedness as part of the effort to promote the development of civil aviation. During that period, civil air capabilities were introduced, and there was a belief that a society that was airminded would better understand the potential benefits of air power. An airminded people would be more willing to embrace air transport, would support the development of air-related infrastructure and would see their community advance more quickly and with less effort due to the beneficial effects of civil aviation. The *Oxford English Dictionary* has defined air-minded as “interested in or enthusiastic for the use and development of

aircraft; so *airmindedness*” and indicated that it was first used in 1927.<sup>4</sup>

A discussion of the notion of airmindedness and a review of the use of the term airminded in English-language print shows that they were used predominantly from 1930 to 1950.<sup>5</sup> The term airmindedness fell out of common usage after the end of the Second World War (WWII), as many Western populations widely accepted air activity as normal, if not yet common, in all its forms. The widespread development of civil aviation, which started prior to WWII, progressed more rapidly in the years that followed, and thus, there was much less need to promote airmindedness. The development of air power as a military capability accelerated after the end of WWII, and some air forces rekindled the use of the term.

In the Western military context, airminded and airmindedness are elements of the formal doctrine of both USAF and the Royal Air Force (RAF). In its capstone publication, Air Force Doctrine Document (AFDD) 1, USAF presents a section entitled “Airmindedness,” stating that: “The perspective of Airmen is necessarily different; it reflects a unique appreciation of air power’s potential, as well as the threats and survival imperatives unique to Airmen.”<sup>6</sup> AFDD 2, *Operations and Organization* further addresses airmindedness as a fundamental concept in a section entitled “The Airman’s Perspective.”<sup>7</sup> Between AFDD 1 and AFDD 2, the USAF doctrine attributes particular and unique perspectives to the airman by virtue of their operational experience and unique viewpoint. The USAF origins of the term airmindedness (apparently attributed to one of the iconic leaders of USAF—General (Gen) Henry H. “Hap” Arnold) were explored to help understand its military use. As described in the text box, airmindedness appears to be an invention of USAF in the 1990s during production of modern written doctrine.

“INTERESTED IN  
OR ENTHUSIAS-  
TIC FOR THE USE  
AND DEVELOPMENT  
OF AIRCRAFT; SO  
AIRMINDEDNESS”

## USAF Airmindedness

AFDD 1 states that: “The study of airpower leads to a particular expertise and a distinctive point of view that General Henry H. ‘Hap’ Arnold termed ‘airmindedness.’”<sup>8</sup>

The 2007 version of AFDD 2 attributes Arnold’s citation to Air Force Manual (AFM) 1-1, Volume 2, *Basic Aerospace Doctrine of the United States Air Force*, March 1992.<sup>9</sup> This latter book is a collection of essays. The 21<sup>st</sup> essay, Essay “U,” starts with the same quotation by Arnold and attributes it to: General Arnold, *Third Report of the Commanding General of the Army Air Forces to the Secretary of War* (Baltimore, MD: Schneiderieth, 12 November 1945), 70.<sup>10</sup> Arnold used the term “airmindedness” on page 70 of the *Third Report*, but not in the context presented in AFM 1-1 or subsequent USAF doctrine.

It appears in the *Third Report*’s “Air Power and the Future” chapter, Section 9, “Civil Aviation.” Arnold says that: “Since military Air Power depends for its existence upon the aviation industry and the air-mindedness of the nation, the Air Force must promote the development of American civil Air Power in all of its forms, both commercial and private.” Arnold’s use of airmindedness is focused on marshalling civil aviation for the national benefit and is not related to a particular military perspective or expertise. He does not use the term anywhere else in the *Third Report*.

Col Dennis Drew (Ret’d), USAF, oversaw initial efforts to produce AFM 1-1 Vol. 2 and was unable to positively identify the author of Essay “U.” However, he offered that “perhaps the author of the essay ... viewed Arnold’s use of ‘airmindedness’ less literally and much more figuratively as applying broadly to both civil and military aviation.”<sup>11</sup> Dr. Dale Hayden, US Air Force Research Institute, offered that USAF’s use of Gen Arnold and the term airmindedness might be a “meta-narrative” that has been accepted, as it served USAF’s interests.<sup>12</sup>

Despite being “universally accepted” and widely quoted, it would appear that Arnold did not use the term airminded to describe the airman’s particular expertise and distinctive point of view. Airmindedness, as currently defined by USAF, appears to be a creation of USAF in the 1990s.

The RAF also recognizes the airman’s perspective and defines airmindedness in Air Publication (AP) 3000, *British Air and Space Power Doctrine* as “airmen who understand and appreciate air power, and are able to articulate and advocate it.”<sup>13</sup> The airmindedness section of AP 3000 provides a description of the principles of war as applied to air power and emphasizes the benefits of airmindedness to the success of the joint campaign. Unlike its allies, the CF and RCAF do not use the term airminded or airmindedness and do not advocate or recognize a particular “airman’s/airwoman’s perspective.”

The RAF and, especially, the USAF views of the airman’s perspective and airmindedness demand further scrutiny since they imply that the airman’s perspective itself leads to some abilities that are unique to airmen. The USAF view is that airmen think differently than other members of the joint team. They maintain that airman naturally think spatially and strategically, whereas the thinking of others is more confined or limited.<sup>14</sup> The USAF Lemay Center for Doctrine reiterated this most recently when it issued a “USAF Doctrine Update on Airmindedness” that emphasized the ability of airmen to “think and act at the tactical, operational, and strategic levels of war, simultaneously if called for.”<sup>15</sup>

The USAF perspective on airmindedness promotes a view that could be interpreted as elitist or exclusive. In an article discussing airmindedness, Dr. Dale L. Hayden, the Deputy Director of the US Air Force Research Institute, states that: “Airmen are better equipped to exploit the other global commons



of space and cyberspace since they view them as domains rather than tools,” reinforcing the notion that airmen are specially endowed.<sup>16</sup> In a 2007 article in the *Air & Space Power Journal*,<sup>17</sup> Major General Charles J. Dunlap (Retired), USAF, clothes his vigorous promotion of air power in a layer of air-mindedness, but his tone is overly negative towards joint partners. Lieutenant Colonel Buck Elton, USAF, criticizes Dunlap’s 2007 monograph,<sup>18</sup> which is a longer version of the same argument presented in the Winter 2007 *Air & Space Power Journal* article, by noting that Dunlap’s “recommendations only serve to discredit ‘air-mindedness’ as unrealistic ...”<sup>19</sup> Elton provides a strong condemnation of Dunlap’s argument; one which is also reflected in USAF doctrine, when Elton remarks that “[p]erhaps the most disturbing concept discussed by General Dunlap is the statement that only Airmen think strategically or specifically that ‘Airmen *tend* to reason in strategic terms and Soldiers are intellectually disposed to favor close combat and *tend* to think tactically.”<sup>20</sup>

In his blog “Building Peace,” Mark Jacobsen, self-identified as a USAF C-17 pilot, proposes that the term air-mindedness should be jettisoned. He argues that he sees “no indication that the Air Force by definition has a more strategic view of war than the Army.” His view is that the current notion of air-mindedness is “elitist” and contributes to “interservice rivalry.”<sup>21</sup>

While airmen have an inherent advantage in the understanding of air power (whether one is discussing counter-insurgency operations, conventional combat or even humanitarian assistance operations), by associating air-mindedness with superior strategic thinking, the notion of air-mindedness presented in USAF doctrine is exclusive and pretentious and does not encourage joint partners to embrace the use of air power. Nonetheless, it would be productive to better understand the perspective of air personnel and define air-mindedness in a manner that would be beneficial in contemporary, joint operations. With the experiences of the last

decade of joint and combined operations, there is a wealth of experience to help define air-mindedness in a manner that would contribute positively to the application of air power in all its forms.

## AIRMINDEDNESS TODAY

*Flying has torn apart the relationship of space and time: it uses our old clock but with new yardsticks.*<sup>22</sup>

— Charles A. Lindbergh,  
*The Spirit of St Louis*, 1953

In an effort to better understand air-mindedness, discussions and interviews with a wide range of experienced military leaders from Canadian, American and British military forces provided an up-to-date view on both the perspective of air personnel and on air-mindedness itself. There was overall agreement that there is an identifiable, particular perspective that could be categorized as “air-minded” or that reflects “air-mindedness.” Working definitions or descriptions of air-mindedness provided by those interviewed ranged somewhat widely, although common threads could be detected. Air-mindedness was described as:

- “Understanding of air power’s unique contributions across the spectrum of conflict, to include joint and coalition, and understanding the full potential that it can bring.”<sup>23</sup>
- “An understanding of air power writ large.”<sup>24</sup>
- “The unique perspective and decision process used by airmen.”<sup>25</sup>
- “The effective incorporation of air power into the planning and execution of joint operations.”<sup>26</sup>
- “The thought process of airmen as they view problems.”<sup>27</sup>
- “Understanding of the influence that air power can have in the battlespace and the supporting role it plays.”<sup>28</sup>

- “How airmen look at problems; their default position. A broad view of air power, both tactical and strategic use of air power.”<sup>29</sup>
- “With anything that military forces plan or execute, always have a view to how an airman would view or do that.”<sup>30</sup>
- “A multidimensional perspective, providing different ways to influence warfare. A graduate-level thinking about warfare.”<sup>31</sup>
- “An appreciation of the third dimension. How it integrates into the other environments. A means to an end.”<sup>32</sup>
- “A lens that one applies to tactical and strategic perspective. How to view problems and execute [them] within the three dimensional realm.”<sup>33</sup>
- “A comprehensive understanding of the third dimension of the battlespace and the application of air power to a maximum, even disproportionate, effect.”<sup>34</sup>
- “An acute awareness of and the ability to rapidly evaluate time and space. The perception of land and maritime domains ‘from a perch’ and the rapid synthesis of and adaptation to options.”<sup>35</sup>
- “The ability to see the battlespace free from the constraints of terrain-based obstacles.”<sup>36</sup>
- “The thought process or concept of employment of aviation assets as they support an overall mission set in the range of military operations.”<sup>37</sup>
- “A deep understanding of air power’s strengths and limitations and when it can be used independently or as a joint enabler.”<sup>38</sup>
- “An openmindedness in the approach to operations.”<sup>39</sup>
- “Airmindedness is about thinking of a problem [in] a multidimensional,

three-dimensional sense, across a full range of operations.”<sup>40</sup>

- “An understanding of air power’s particular capabilities put together in a broader picture.”<sup>41</sup>

As listed above, the short definitions of airmindedness offered by each of the leaders provide an indication of how each viewed airmindedness but do not completely or fully reflect their views or thoughts on the subject. Each individual provided more extensive commentary that addressed both the core and the nuances of airmindedness and are addressed in the paragraphs that follow, focusing on the elements of Canadian usage of the term.

While some of the non-USAF leaders interviewed had not heard of the term airmindedness, all agreed with the notion that there exists a manner of thinking or a way of approaching a problem that fits the notion of being airminded and could be described as airmindedness. So airmindedness does appear to be real. There were sufficiently similar elements used to describe airmindedness; therefore, it reflects an actual condition and is not just an arbitrary construct.

A large number of those interviewed found the existing USAF definition pejorative, “outdated”<sup>42</sup> or “archaic.”<sup>43</sup> This negative reaction was not limited to USAF’s joint partners, as several very senior USAF officers indicated that, in their opinion, the USAF definition was unhelpful. Lieutenant General (Lt Gen) Michael C. Short (Retired), USAF, described it as “chest beating,”<sup>44</sup> and Lt Gen Allen G. Peck (Ret’d), USAF, indicated that “the term ‘airmindedness,’ when used in a better-than-thou context by Airmen, can do more harm than good regarding the perception of the Air Force as a coequal partner at the joint force table.”<sup>45</sup> They offered that the USAF use of airmindedness may have contributed to an alienation of joint partners and has put them “on the defensive.”<sup>46</sup> This was in fact validated by the comments of several of the senior non-USAF participants,

such as Lieutenant-General (LGen) Charles Bouchard (Retired), RCAF, who suggested that the USAF approach to airmindedness “puts a wedge between the services.”<sup>47</sup>

The USAF definition associates airmindedness with a perspective or a point of view, and while this was a common element of the leaders’ view of airmindedness, they saw airmindedness as much more than simply an outlook or a viewpoint. Airmindedness for them was not only a way of thinking about a problem or a situation but also related to the application of air power. It was based on an extensive and comprehensive knowledge of air power as well as a discerned, applied understanding of how air power could achieve effects. They saw airmindedness as being of greatest relevance when air power was considered as part of the complete team—national, political, joint, combined or coalition. For them, airmindedness related to the application of air power through the full range of operations, from tactical to operational to strategic and included air power’s ability to achieve effects to satisfy a national objective, both independently or in a supporting role. In the end, they believed that an element of airmindedness was an appreciation that air power was seldom applied in complete isolation, either from other military capabilities or from other instruments of national power. The most important difference from the USAF doctrinal definition was the emphasis that airmindedness must relate to the application of air power to achieve effects, rather than be seen simply as a perspective.

Those interviewed saw airmindedness as being scalable. In addition to the range of operations from tactical to strategic, they saw airmindedness as applying to individuals, from non-commissioned member and officer operators and support personnel, to unit, formation and force commanders. Major-General (MGen) Mike Hood, RCAF, reflected a common perception in his view that airmindedness was “scalable” and that it was “not limited to senior leaders.”<sup>48</sup> While LGen André Deschamps (Ret’d), RCAF, definitely saw the

value of airmindedness in addressing strategic-level challenges, he viewed it as a “spectrum of understanding, beginning at the tactical level.”<sup>49</sup> Somewhat differently, Bouchard saw airmindedness as having meaning at the tactical level, but that “service-mindedness had no place at the strategic level,” at which level “what mattered was jointness, whole-of-government, PMESII (political, military, economic, social, infrastructure and information systems).”<sup>50</sup> From the comments provided, an effective Canadian view of airmindedness must account for the wide range of tactical and operational challenges and levels of conflict (strategic, operational and tactical) that demand the effective employment of air power.

One of the most significant revelations was the leaders’ view that airmindedness was not unique to air force personnel. While air force personnel were expected to possess and demonstrate airmindedness, it was also noted that those of other backgrounds could also demonstrate what was understood to be airmindedness. All leaders concurred to a high degree with United States Navy (USN) Rear Admiral Terry B. Kraft’s view that “airmindedness is more natural for aviators, but not exclusive to them.”<sup>51</sup> As a result of their common environment and experience, airmindedness was expected and largely seen as innate for operators from the air component. Non-air force personnel who were sufficiently exposed to thinking about air power, who worked to overcome air power challenges and who shared air power experiences could also develop a degree of airmindedness. Possibly due to the more generic nature of airmindedness at higher levels, or perhaps due to their greater accumulated exposure to air power, the development of airmindedness in non-airmen was more common among those at higher ranks and with longer military service. Lt Gen Stanley Clarke III, USAF, provided the view that Gen John R. Allen, United States Marine Corps (USMC) and recent commander of NATO’s International Security Assistance Force (ISAF) in Afghanistan, “understands air power very quickly” and is an example of the airmindedness displayed by certain senior joint commanders.<sup>52</sup>

All of the leaders agreed that airmindedness derives from a combination of experience, education, training and culture. AFDD 1 describes airmindedness and the perspective of air personnel but does not explicitly address the source to this particular quality. In their doctrine, the RAF indicates that the airman's perspective develops from an "instinctive empathy with scale and size and ease in operating across the different levels of warfare—sometimes on the same mission."<sup>53</sup> This exposure to the unconstrained nature of air operations was seen as an aspect of airmindedness, but it could be achieved through a variety of means. All the sources of airmindedness mentioned above—experience, education, training and culture—were seen as necessary for the development of airmindedness in air personnel and those from other backgrounds. For those from outside the air environment, a strong grounding in air power education and training, accompanied by experience in planning and executing operations involving significant elements of air power, would compensate for some of the lack of air environment acculturation. Nonetheless, a sufficient exposure to air culture remains necessary for the development of airmindedness.

Airmindedness was viewed as beneficial, as effective airmindedness reduced overall risks to operations and increased all-arms effectiveness. Air Commodore Andrew Turner of the RAF and his UK counterparts noted that a failure to employ air power effectively during initial UK operations in southern Afghanistan was a result of a lack of airmindedness and led to higher-than-necessary losses.<sup>54</sup> In the CF, Bouchard claims that a similar lack of airmindedness developed over a generation in which there was little operational interaction between the Army and the Air Force and contributed to committing to operations in Afghanistan without adequate air power or mitigation of the risks.<sup>55</sup> Clarke credits airmindedness with the effective coupling of persistent surveillance and precision strike in operations in Iraq and Afghanistan, for instance, leading to the rapid increase in effectiveness and the growing use of remotely piloted aircraft in the

contemporary operating environment.<sup>56</sup> A lack of airmindedness leads to planning or thinking about the use of air power "as an afterthought."<sup>57</sup> While he viewed airmindedness as expected in air force officers and air planning staff, MGen Jon Vance, Canadian Army, expressed a view similar to Brigadier Richard Felton, saying that "airmindedness in other planners is critical, as effective planning can't be the air force guy saying after the fact 'hey, don't forget about air ...'"<sup>58</sup>

A range of airmindedness was recognized by some of the leaders interviewed, commonly acknowledging a lesser form which could be termed "air awareness."<sup>59</sup> It was seen as a less comprehensive understanding of air power, compared to the more fulsome understanding equated with airmindedness. Air awareness was understood to arise from either limited training or education in air power or, perhaps, a limited experience operating with air power, without the formal training, education or acculturation that would be needed to develop airmindedness. Air awareness might reflect a limited understanding, either theoretical or practical, of the benefits or effects of a particular class of air power. But air awareness would not couple that limited understanding with an appreciation of the limitations or constraints of that class of air power or, more importantly, an understanding of how other aspects of air power could be brought to bear. Moving from air awareness to airmindedness and continuing further would lead to the concept of jointness, and even further, it was a whole-of-government perspective. Without doubt, airmindedness is one of the essential elements of jointness, but it is beyond the scope of this analysis to discuss the contribution, role or relationship of airmindedness to jointness or "jointmindedness." This is an area that merits further examination.

USAF extended the notion of airmindedness to the areas of space and cyber, asserting in the description of airmindedness that "Airmen also think of power projection from inside the US to anywhere on the globe in hours (for air



operations) and even nanoseconds (for space and cyberspace operations).<sup>60</sup> The leaders contacted for this study did not see airmindedness as including particular expertise in space or cyber activities.<sup>61</sup> In the Canadian context, while space is a physical location, BGen Rick Pitre, CF Director General Space, viewed space effects as inter-domain, with space capabilities and effects intersecting, enabling and crossing all the traditional domains and that airmindedness was not a specific contributor to space effectiveness.<sup>62</sup> Airmindedness was focused on the air domain and air power; whereas for the most part, the leaders saw space and cyber as different, unique domains on their own. In describing the complexities and demands of today's cyber operations, some contend that the United States "Air Force must start to inculcate cyber mindedness rooted in history and heritage," distinct from airmindedness.<sup>63</sup> For the CF, there is little rationale for including space and cyber as part of the Canadian interpretation of airmindedness.

A final consideration regarding a modern Canadian definition for "airmindedness" relates to the immutability, or conversely the variability, of the term. As has been noted

in several reports, outside of the *Oxford English Dictionary* definition, there is a lack of agreement over the actual application of the term. In his defence of airmindedness, Hayden notes that "air-mindedness does not have a static definition but captures nuances that change over time."<sup>64</sup> In fact, it is somewhat natural that the use of the term should morph over time, changing to suit the circumstances. This indicates that there is some latitude in the Canadian interpretation of airmindedness, but in order for it to be believable, to be accepted, to encourage usage and to have sufficient resilience to endure, the definition must also retain some similarity to the historical or previous uses of the term.

### A CANADIAN DEFINITION OF AIRMINDEDNESS

*We want the air to unite the peoples,  
and not to divide them.*<sup>65</sup>

— Lord Swinton,  
Chicago Convention on  
International Aviation, 1944

In the Canadian context, and based on the considerations discussed above, an appropriate CF definition of airmindedness might be:

Airmindedness is a comprehensive understanding of air power and its optimal application throughout the operational environment.

This definition is similar in many ways to the RAF description of airmindedness, applying to a range of personnel and the full spectrum of operations. As will be elaborated, a Canadian interpretation of airmindedness would be that in any situation a firmly rooted airmindedness will ensure the tremendous value of air power is employed to maximum effect, wherever and whenever air power can make a contribution. The CF should share with the UK the view that airmindedness is not restricted to airmen.<sup>66</sup> The Canadian



CF Photo: Cpl Lou Penney

view of air-mindedness needs to reflect that air-mindedness is applicable to all aspects of air power, from air superiority and air dominance to the delivery of logistics in combat and in domestic humanitarian relief to joint air operations conducted with partners from other environment or with allies.

The Canadian view of air-mindedness requires it to apply to the full spectrum of military operations. Air power is potent and influential, able to respond with considerable speed and flexibility. It is versatile, and the elements of air power can achieve multiple effects, often at the same time. But air power has definite limitations that need to be taken into account during planning and execution. Modern operations have become “ever more interdependent across the various domains,”<sup>67</sup> and air power effects must be delivered in that cooperative, interdependent environment. In the end, air power can make a significant difference in all operations, from those that are air-centric and focused on the delivery of air power to those with a more minor role for air capabilities. Air-mindedness is the art and the science behind air power. It is about bringing air power to bear with maximum effectiveness in any situation.

For Canada, air-mindedness is not limited to particular air personnel, nor is it restricted to a certain rank or organizational level. Air-mindedness for the CF must be applicable to all members of the RCAF who must demonstrate a comprehensive understanding of air power writ large and be able to contribute to the application of air power in a complex, joint environment. Air-mindedness is also desirable in members of the other environments. Starting as air awareness, the limited understanding of air power by joint partners must grow so that once at the level of joint commanders it resembles air-mindedness and ensures powerful air capabilities are properly applied.

Air-mindedness is a critical element of RCAF air domain operations, but to avoid waste and unnecessary risk, it is also essential even where air power plays a lesser role. Where operations

do not directly involve air activities, the absence of air power should be the result of a considered decision to forgo the use of air—the result of an air-minded decision—not the failure to understand air power. But there is a limit to air-mindedness. For the CF, space and cyber should be treated as separate domains, like the land and maritime domains. There are especially strong complementary linkages between air power and space and cyber capabilities, but neither space nor cyber are subordinate to air power or air-mindedness. Although the CF has a strong affinity for joint operations, as long as air power is generated separately from the other types of military force, there will be air-power specialists, and it will be beneficial to continue to think of air-mindedness apart from other types of joint thinking. That said, air-mindedness must be integrated with joint thinking in addition to its value in air-centric operations.

In order to better relate to air-mindedness, it may be beneficial to draw a parallel between air-mindedness and airmanship. Airmanship is defined “as art, skill, or ability in the practice of aerial navigation,”<sup>68</sup> but those in aviation see it as far more than just skill or ability. Chris DeMaria, a certified flying instructor, describes airmanship as “not simply a measure of skill or technique, but also a measure of a pilot’s awareness of the aircraft, the environment in which it operates and of his own capabilities. One of those capabilities is physical skill, but equally important components are wise decision making and an elevated sense of self-discipline.”<sup>69</sup> In many ways, that combination of art, skill, technique, situational awareness and understanding of capabilities and limitations also describes the relation of air-mindedness to air power. In effect, air-mindedness and airmanship are companion bookends supporting the delivery of air capabilities.<sup>70</sup> For those familiar with the notion of airmanship, the important role of air-mindedness is well reflected in the following expression:

Air-mindedness is to the application of air power as airmanship is to the operation of aircraft.

## DEVELOPMENT OF AIRMINDEDNESS FOR THE CF

*A good inter-Service staff officer must first be a good officer of his own Service, and we should lose more than we gained by merging the identity of the three Staff Colleges.<sup>71</sup>*

— John Slessor, Marshal of the RAF

While the main objective of this study is to examine a contemporary Canadian interpretation of airmindedness, it is beneficial to offer some comments on the development of airmindedness in the CF. As discussed above, airmindedness arises from a combination of experience, education, training and culture. Aviators in Canada are well educated in the art and science of their particular air power capability (that is to say, transport, maritime aviation, fighters, tactical aviation, and so on), but for the majority, there is very limited exposure to formal training or education in the other aspects of air power, outside an individual's area of expertise.

A first step in the development of airmindedness for the RCAF and CF would be recognition of the term and its incorporation into doctrine. By defining and adopting airmindedness as an element of RCAF doctrine, the Air Force would have a foundation upon which to build. Once part of RCAF doctrine, it should be possible to target the development of airmindedness.

The formation of airmindedness in the CF must consider the relation between the development levels of personnel and the levels of application of airmindedness. While airmindedness is applicable to all levels of the military environment, the airmindedness of a first-tour pilot would naturally be different and more restricted than the airmindedness of an experienced unit or formation commander. Furthermore, air-power expertise within one's area of specialization may provide a suitable level of airmindedness for the first-tour pilot, but it would not be sufficient for an aviator who must apply the larger spectrum of air-power capabilities. Development of airmindedness in the CF must account for the requirements at each level.

The Commandant of the Canadian Forces College, BGen Craig Hilton, Canadian Army, has observed that aviators or airmen/airwomen at the rank of major may have a well-developed understanding of their air-power specialty, but they typically do not exhibit much understanding or skill in the application of other elements of air power.<sup>72</sup> He commented that the termination of Development Period 2 (DP2) within the RCAF contributed to this separation between the RCAF's air-power communities.<sup>73</sup> Regardless of whether it is through the renewed DP2 distance learning curriculum or some other method, to develop airmindedness beyond the most basic or lowest levels, the RCAF needs to deliberately train and educate its personnel in the application of all air power capabilities and the achievement of air effects in joint operations. RCAF success in this area is currently insufficient to provide the airmindedness needed for the 21<sup>st</sup> century.

Another aspect that was discussed was the expression of airmindedness by non-airmen, by non-aviators. As Vance and others indicated, while airmindedness is expected from aviators, it is very desirable and beneficial from those from other environments. Canadian Forces College professional development programmes provide only limited training or education in the application of environmental capabilities, including air power—a level that could be categorized as awareness or familiarization. Currently the CF does not formally train or educate the wider aspects of air power across the joint environments.<sup>74</sup> To do so is in the interests of the RCAF, the service with expertise in the application of air power and the responsibility to generate air effects on behalf of the nation. It may not be possible to provide sufficient training or education in air power to develop airmindedness across the CF population, but it would be beneficial and might be possible to achieve a higher level of air awareness than currently exists. An increase in air awareness would, in itself, lead to a better application of air power in the joint environment, and doing so might permit certain joint partners to actually develop airmindedness. The USMC educates all of its officers, regardless of specialization,

in the application of air power. The leadership of the USMC expects all officers to exhibit fundamental levels of airmindedness, and in doing so they optimize their use of air power.<sup>75</sup> The CF and RCAF, in particular, should implement training and education in order to generate joint air awareness and facilitate the development of airmindedness.

Experience and culture are the other elements necessary to develop airmindedness, and the CF and the RCAF have both strengths and weaknesses in this regard. The CF's joint construct provides some Air personnel with the opportunity to work in joint environments, alongside their Army, Navy and special operations partners. This is mutually beneficial, exposing aviators to joint operations, while sharing Air experience and culture with non-airmen/airwomen. On the other hand, RCAF aviators do not typically get much cultural exposure to or experience in the greater Air Force, outside their area of specialization. At higher ranks, this is changing somewhat, with the introduction of air component commander (ACC) training and preparation. ACC training is focused on the command and control aspects of air power, and although it does not specifically address the tactical and operational employment of air power, the exercises and employment of nascent ACCs necessarily leads to cross-community acculturation and experience. This training is beneficial, but the cross-community experience is limited and circumstantial—it needs to be widely targeted and more deliberate.

One of the strongest contributors to development of airmindedness may be the recent Commander, 1 Canadian Air Division initiative to “Fly in Formation.” This effort to bring the air power elements of the Air Division together to focus on operational and tactical challenges will result in increased experience and understanding across the RCAF communities. It will contribute to development of airmindedness among participants.

While the CF gained strong joint operational experience in Afghanistan, there

has been very little tradition or opportunity for the environments of the CF to train together as a joint force. Similar to the benefits of “Fly in Formation” for its impact on development of airmindedness in the RCAF, the new JOINTEX (Joint Exercise) series will provide an important opportunity for combined arms and cross-service experience and acculturation. In order to develop airmindedness and comprehensively understand and apply air power's contribution in the joint environment, airmen and airwomen need to be exposed to and train with their joint partners. JOINTEX assists in the development of the airmindedness of airmen and airwomen. To encourage and promote airmindedness in those from the other environments, they need practical exposure to and experience with air power. JOINTEX addresses this requirement as well.

## CONCLUSION

Air power has made significant contributions to operations in the last decade. The optimum employment of air power is enhanced by the airmindedness of those involved in the generation and application of air effects. While airmindedness is not defined in Canadian doctrine, an analysis revealed that the existing USAF definition is too limited to meet Canadian purposes. Airmindedness for the RCAF and CF is best defined as: “Airmindedness is a comprehensive understanding of air power and its optimal application throughout the operational environment.” Airmindedness is most common among airmen/airwomen and aviators but is not, by definition or practice, restricted to this group. Arising from a combination of experience, education, training and culture, airmindedness is shared by those from other environments or occupations who have accumulated a sufficient mixture of the elements of airmindedness and are able to comprehensively understand and apply air power across the operational spectrum.

The RCAF should encourage the development of airmindedness, but this encouragement must start with the establishment of a definition for airmindedness and its recognition in Canadian doctrine. There needs to be formal education of air power across the RCAF's communities,



acculturation and exposure to pan-Air Force capabilities as well as real joint training and exercise opportunities. The cross-cultural experience and exposure applies to members of other environments who would also improve their operational effectiveness as a result of increased air awareness. Certain persons, such as some senior joint commanders, may develop air-mindedness after accumulating sufficient air expertise and knowledge.

Airmindedness is focused on the air domain and the application of air power, but the airminded would appreciate the intimate relationship between air, space and cyber domains and capabilities. The relationship of airmindedness to jointness should be considered, but as long as the stand-alone notion of “air power” exists, then “airmindedness” will continue to be beneficial. In order to assist in the understanding of airmindedness, it may be useful to consider the expression: “Airmindedness is to the application of air power as airmanship is to the operation of aircraft.”

Current and future military operations require the close cooperation and synergy of all elements of military power. The effective employment of air power across the operational spectrum requires that those involved develop and express a high degree of airmindedness, an essential element of air power. 🌐

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## ABBREVIATIONS

|                |  |
|----------------|--|
| <b>ACC</b>     | air component commander                  |
| <b>AFDD</b>    | Air Force Doctrine Document (USAF)       |
| <b>AFM</b>     | Air Force Manual (US)                    |
| <b>AOC</b>     | air operations centre                    |
| <b>AP</b>      | Air Publication (UK)                     |
| <b>BGen</b>    | Brigadier-General (Canada)               |
| <b>CF</b>      | Canadian Forces                          |
| <b>Col</b>     | Colonel                                  |
| <b>DP2</b>     | Development Period 2                     |
| <b>Gen</b>     | General                                  |
| <b>JOINTEX</b> | Joint Exercise                           |
| <b>LGen</b>    | Lieutenant-General (Canada)              |
| <b>Lt Gen</b>  | Lieutenant General (USAF)                |
| <b>MGen</b>    | Major-General (Canada)                   |
| <b>MOD</b>     | Ministry of Defence                      |
| <b>NATO</b>    | North Atlantic Treaty Organization       |
| <b>NORAD</b>   | North American Aerospace Defence Command |
| <b>RAF</b>     | Royal Air Force                          |
| <b>RCAF</b>    | Royal Canadian Air Force                 |
| <b>Ret’d</b>   | retired                                  |
| <b>UK</b>      | United Kingdom                           |
| <b>US</b>      | United States                            |
| <b>USAF</b>    | United States Air Force                  |
| <b>USMC</b>    | United States Marine Corps               |
| <b>USN</b>     | United States Navy                       |
| <b>WWII</b>    | Second World War                         |

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