THE ROYAL CANADIAN

AIR FORCE JOURNAL

SUMMER 2015

VOL. 4, NO. 3

SPECIAL EDITION

CELEBRATING THE 10TH ANNIVERSARY OF
THE CANADIAN FORCES AEROSPACE WARFARE CENTRE







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 air and space 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 air and space 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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Published by Canadian Forces Aerospace Warfare Centre ISSN 1927-7601

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AIR FORCE JOURNAL



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THE ROYAL CANADIAN AIR FORCE JOURNAL (RCAFI) welcomes the submission of articles, book reviews and shorter pieces (which will be published in the Letters to the Editor, Points of Interest, Pushing the Envelope and Point/Counterpoint sections) that 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.

JOURNAL SECTIONS

Item	Word Limit*	Details	
Letters to the Editor	50-250	Commentary on any portion of a previous <i>RCAFJ</i> .	
Articles	3000-5000	Written in academic style.	
Book Reviews	500-1000	Written in academic style and must include:	
		• the book's complete title (including subtitle);	
		• the complete names of all authors as presented on the title page;	
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		• the book's ISBN and number of pages; and	
		• a high resolution .jpg file (at least 300 dpi and 5 by 7 inches) of the book's cover.	
Points of Interest	250-1000	Information on any topic (including operations, exercises and anniversaries) that is of interest to the broader aerospace audience.	
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Point/Counterpoint	1500-2000	Forum to permit a specific issue of interest to the RCAF to be examined from two contrasting points of view.	

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- The Senior Editor will notify contributors on the status of their submission. It may not be possible to publish all submissions.
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Call for Submissions

For the Fall 2015 issue: 30 July 2015

For the Winter 2016 issue: 30 October 2015 For the Spring 2016 issue: 30 January 2016 For the Summer 2016 issue: 30 April 2016

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EDITOR IN CHIEF'S MESSAGE

n 2005, the senior Air Force leadership of the day took a bold step when they sanctioned the standing up of the Canadian Forces Aerospace Warfare Centre (CFAWC). It was by no means a hasty decision, as the requirement and organizational construct of the unit had been under discussion for several years. CFAWC reflected an understanding that dedicated intellectual horsepower was required to support an air force in the throes of transforming from a Cold War focus to one that addressed a broader range of threats and capabilities. Although doctrine production, specialist training and lessons-learned programme implementation were key tasks of the new centre, often overlooked was the mandate to promote and support airpower¹ thought and education. Now, after a decade of hard work on all fronts, we should take a moment to reflect upon CFAWC's efforts to grow the Royal Canadian Air Force's (RCAF's) intellectual capital.

A cursory glance at CFAWC's original implementation plan highlights the emphasis that Air Force senior commanders placed on the need to encourage professional airpower study and education. A need to engage with similar Allied agencies was balanced with the requirement to establish linkages with a broader Canadian academic and air-power community. Important as these activities were, CFAWC also sought to tap into an oft-neglected source of airpower thought—members of the RCAF. The individuals who practise air power at the proverbial coalface were given a voice beyond their community through publications such as the Royal Canadian Air Force Journal, the Curtis Papers and Sic Itur Ad Astra series and, most recently, the InForm short articles. The material contained therein serves to stimulate airpower thought and study while at the same time permitting an open and frank discussion on issues of interest to air-power professionals.

The importance of this type of intellectual discourse cannot be overstated. The RCAF is good at what it does, but there is always room for improvement and growth. Mastering our chosen profession demands career-long study, application and critical analysis. With this in mind, my staff and I have selected a small sampling of some of the "best" articles that typify those criteria and that CFAWC has been privileged to shepherd into print over the last 10 years. Best is a relative term, but these articles merit a reread. They are prime examples of musings that, at the risk of generating disagreement or "gently poking the bear" with respect to policy and procedures, caused us to pause and think about what it is we do.

I encourage you to take a few moments of your time to read, or perhaps reread, the following articles. It is our hope at CFAWC that they encourage the submission of material of equal or better quality and depth. We look forward to the next decade of airpower thought and discussion—who knows where it might lead!

Colonel Kelvin Truss

Editor-in-Chief

Abbreviations

CFAWC Canadian Forces Aerospace Warfare Centre

RCAF Royal Canadian Air Force

Note

1. AIRPower is derived fundamentally from the RCAF vision articulated in the capstone publication, Air Force Vectors, which brings together the concepts and capabilities that position the RCAF as "an agile and integrated air force with the reach and power essential for CAF [Canadian Armed Forces] operations." It has both a practical (air power) and intellectual (airpower) element. Both elements, from the tactical application of air power to strategic airpower mindedness, need to be mastered to ensure the comprehensive and integrated application of AIRPower (or "AIRPower in Formation," which represents the Commander's central message to RCAF personnel).







THOUGHTS ON PROFESSIONALISM

By Brigadier-General Christopher Coates, OMM, MSM, CD

Reprint from The Canadian Air Force Journal Vol. 3, No. 4, Fall 2010

In the fall of 2009, the Canadian Forces Aerospace Warfare Centre commissioned a Leadership Lessons Learned project to interview Joint Task Force Afghanistan Air Wing commanders and record their observations on concepts and practices of leadership as they relate to running an air wing in combat. As the researcher/interviewer for the first of these interviews I developed a set of questions based on recent air force leadership writings and conducted two interviews with then Colonel Christopher Coates. In the process of these interviews two things became apparent to me: that his views needed, most certainly, to be shared with a wider audience, and that he would make the perfect guest speaker to talk to my fourth year ethics and professionalism class at Royal Military College (RMC). The following paragraphs are based on his remarks to the class, and they capture the essence of his more detailed interview comments.

Dr. Randall Wakelam History Department, RMC

WHAT DOES IT MEAN TO BE A CANADIAN MILITARY PROFESSIONAL?

was recently asked to speak to a small group of students taking a course in Ethics at the Royal Military College. I had been asked to lead off the session with my views on what it means to be a military professional. I found the response to the question not quite what I expected it to be.

I have a wide range of experiences, from training and exercises to operations domestic and deployed; from subunit to unit to headquarters at the tactical, operational, and strategic levels. I have worked with various Air Force communities and operated extensively alongside our Army and to some degree with our special operations forces. My experience with our Navy is limited, but perhaps those with connections to that element will discover that my remarks apply nonetheless.

With that particular breadth of experience, what stands out for me is that our military is very much composed of a variety of people, with a variety of personality traits and a variety of characters. Off the top, I would find it hard to find a single, all-encompassing definition of what it means to be a Canadian military professional. Certainly, everyone seems to have a notion of the qualities of a military professional. One might think those qualities to consist of the following:

Bravery. In a military at war it seems that bravery would be essential to face threats and dangers, and to maintain the confidence of other members of the group.

Intelligence. To participate in the complex, modern operational environment would require a relatively intelligent person.

Discipline. The controlled application of military force is fundamentally dependent upon well disciplined military units. It follows then that the members of the military should be highly disciplined in their approach.

Dedication. The demands of military life are stressful at all levels and a member needs dedication to keep going when the going gets tough.

Strength. Given that many military tasks are physically demanding, soldiers, sailors, airmen or airwomen would be effective only if they have sufficient physical strength.

Good communications. In a dynamic, stressful operational environment, often acting with a high degree of independence, military professionals have to be able to listen carefully to instructions and feedback, and to monitor their situation, passing on information in a timely and effective manner.

Hardworking. Hardworking professionals seem more likely to inspire their colleagues to achieve challenging objectives, and function effectively in that environment of independence, mentioned above.

Team player. To promote the morale of their group, military professionals need to contribute to their unit's welfare and accomplishments.

Common values (or at least the values of the nation). As the military acts on behalf of the nation, members of the Forces need to ensure that their actions are consistent with the desires of the nation. Common values will facilitate this sometimes difficult requirement.

Trustworthy. Soldiers, sailors, airmen or airwomen need to be able to enjoy the trust of their team, especially in challenging circumstances where lives are on the line, such as in combat.

Respectful. A professional who shows respect for the other members of the unit is more likely to receive their support, especially in difficult times.

WHATEVER WE DO WE DO IN A GROUP

And in the current day and time, perhaps one might also consider:

Caring. A professional with an element of compassion may be more successful in military operations that are focussed on assisting populations in trouble, such as those that are victims of natural disaster or those caught in the midst of a conflict.

Sense of humour. A good sense of humour might assist the military professional to deal with certain stressful situations, and contribute effectively to unit well-being.

Service before self. The members of Generation Y (approximately, those born in the era 1975–1985) typically place value on peer acceptance, and as such the exigencies of military service might be somewhat in conflict with their normal beliefs. In their circumstances, the need to value service to country before self may merit special consideration.

Violent (dare I say). The recent involvement of the Canadian Forces in combat operations against a ruthless enemy might lead some to believe that our military members need to be sufficiently comfortable in violent situations in order to deal with difficult combat conditions.

Surely you have your own thoughts about these and other characteristics of Canadian military professionals that might make this list.

Well, in my experience, I think I could identify more than a few very successful Canadian military professionals who are not strong in some of those qualities mentioned above. A great number have some of the qualities, with the rare individual having many of those listed. But then there are others who might be more successful as military professionals even though they have fewer of the qualities mentioned. In fact, I would propose that most are missing a few or several of these qualities or elements of

character. So what is it that makes a military professional in the Canadian context?

No one in our Canadian Forces (CF) works or acts as an individual. Whatever we do we do in a group or groups. In the group, the strengths of one compensate for the weaknesses of the others. Perhaps it is this balancing of strengths and weaknesses in the group that makes the collective largely successful. In the CF some groups are actually selected to offset the strengths and weaknesses of its members, while in other groups in our Forces the balancing seems to be a more natural, subtle process that simply evolves over time. In my view, then, what it means to be a military professional is someone who works well in a group. I would go so far as to say it is someone who works very well in a group.

So if being someone who works well in a group is a primary attribute of being a military professional in the Canadian context, are there any commonalities or truisms associated with that? In my experience, someone who works well in a group, and is therefore a successful military professional, has two fundamental character traits: honesty, and, putting the interests of the group before their own interests.

Honesty is essential to the ability of members of the CF to be valuable contributors to a group, and in that sense a military professional. First and foremost it means honesty to themselves. It might not mean the sort of honesty that is honest to a fault, but it certainly means being honest when it matters. (And yes, this has the potential to be the subject of another lengthy debate, especially when addressing an ethics class.) The necessary honesty is perhaps well illustrated by the kind of honesty displayed by the character Maria in the movie The Sound of Music. Military professionals must always be absolutely honest with themselves, and with their superior. And military professionals are absolutely not people who resort to deceit as a way of accomplishing objectives within the group.

PUTTING THE INTERESTS OF THE GROUP BEFORE ONE'S OWN INTERESTS

The other quality essential to working well within a group, and thus being a true military professional, is that of putting the interests of the group before one's own interests. This is something that the military professional always does. Most certainly this applies to putting the interests of the immediate group first, although the interests of the larger group may not always be respected in the same way. Again, I am relating to common traits that I have seen among Canadian military professionals, rather than trying to argue for what should or should not be. In that context, the military professional might not put the interests of the CF or the national interest before their own, but certainly that individual always puts the interests of the immediate group first and foremost. In my experience, a prime example of this might be with the Reserves, where the individual may have decided for personal reasons to pursue a different life path and not necessarily put the interests of the CF before their own, but once involved in a task, mission, or operation that same individual unquestionably, and indistinguishably, places the interests of their immediate group before their own interests. Within that context, the Reservist is no different from a member of the Regular Force and is every bit as much a military professional.

In addition, I have seen cases where individuals are no longer able to put the interests of the group before their own, and this causes a conflict within them that was only resolved by leaving the Regular Force. Some made a successful transition to the Reserve Force (where it is possible to continue to serve, but with an ability to take on other pursuits as well), while others sought other avenues. The true military professionals recognized the requirement to put the interests of the group before their own, or felt compelled to leave.

So, while I have identified one characteristic and two traits that are common to Canadian military professionals, I should add that this fits the widest spectrum of our Forces. That is, the widest spectrum in terms of ranks and classifications. If one narrows the group, I find that so

too can one narrow the definition of the characteristics of military professionals within that group. In my view, as rank and responsibility increase, then certain characteristics become more common. This is the case for both officers and the senior non-commissioned members. But at all ranks, and in all classifications, and from the very beginning, my experience is that honesty and putting the interests of the group before one's own interests are an absolute necessity. In fact, I believe it would be possible to argue that our recruit and basic schools teach, train, and select for the ability to work in a group. And to some degree, if candidates are able to work well in a group, regardless of what other limitations exist, they may have the potential to become military professionals. The other skills, the skills that constitute the member's chosen military occupation, are taught later, not at recruit or basic schools.

In reflecting on my conclusion that a Canadian military professional could really be distilled to a concept as simple as someone who works well in a group, I have wondered if the same could be said for other militaries. I thought of my experiences with our various allies, while training, in schools and in the field, and operating, from Germany to Bosnia, from NORAD to Afghanistan. I thought of their militaries, some larger, some smaller. And in many cases, I believe it was possible to identify what appeared to be defining characteristics for them other than simply the ability to work in a group. As such, I found myself satisfied that my thoughts were well justified in the Canadian context, since I imagine that if there was some defining Canadian characteristic I would have found it, like I did for the others.

So, although it may not bear the romantic hallmarks associated with such traits as bravery or endurance, strength, or discipline, in my experience, the ability to work well in a group, even very well in a group, is a legitimate response to the question: "What does it mean to be a Canadian military professional?" The traits of honesty and putting the interests of one's immediate group before one's own interests are

the two fundamental characteristics that are necessary in this regard. After working alongside Canadian military professionals in a great variety of situations it is perhaps less than a surprise that such a straightforward notion could be at the base of our marvellous success.

Brigadier-General Christopher Coates has flown helicopters in the scout role, and utility helicopters in both tactical and special operations. Having commanded at squadron and wing and served on operations staffs at all levels, Brigadier-General Coates has deployed on operations as a Forward Air Controller, an aviation unit commander, and was recently the first commander of the JTF-Afghanistan Air Wing. Brigadier-General Coates is appointed the Deputy Commander Continental NORAD Region at Tyndall Air Force Base, Florida.

Randall Wakelam flew helicopters for the army, commanding 408 Tactical Helicopter Squadron from 1991 until 1993. Subsequently, as a military educator he served at the Canadian Forces College. In 2009, he joined the History faculty of RMC as a civilian. He holds a PhD from Wilfrid Laurier. He has written extensively on military command and decision making as well as military education, with a particular focus on the Air Force. His first book, *The Science of Bombing: Operational Research in RAF [Royal Air Force] Bomber Command*, was published by University of Toronto Press in 2009.

List of Abbreviations

CF Canadian Forces

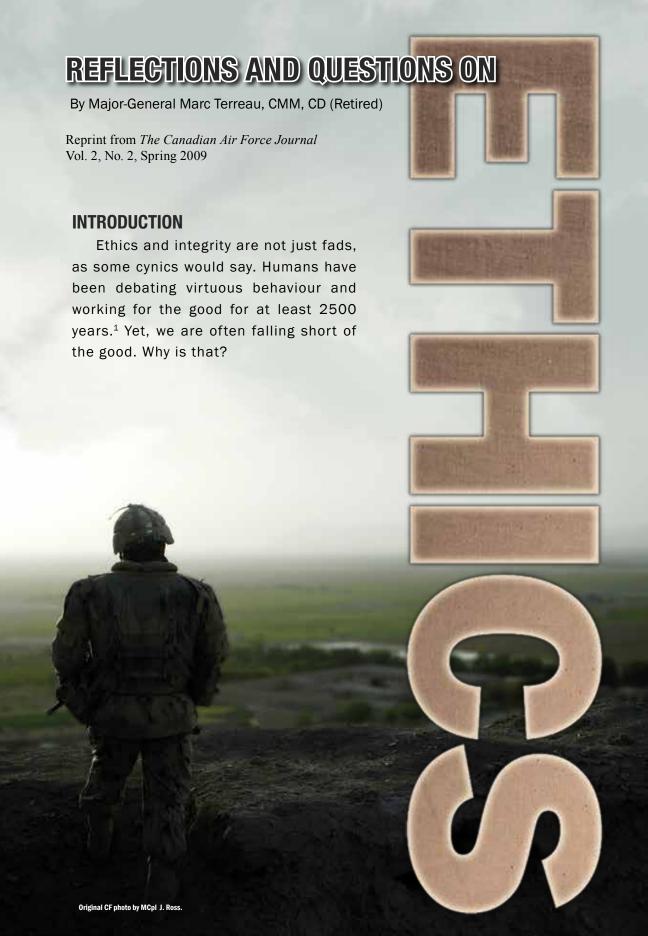
JTF Joint Task Force

RAF Royal Air Force

RMC Royal Military College

Note

1. The author fully appreciates that our recruit schools exercise pass/fail judgment on candidates for a variety of skills; however, I believe it is safe to say that the ability to work effectively in a group is a uniquely critical skill selected for at our basic schools. Without this skill, without honesty and the ability to put the interests of the group first the candidate would not be permitted to complete the course.



Over the years I have dealt with leaders, great and poor, and observed ethical dilemmas played out in various settings. My observations have been primarily in the public sector including the Armed Forces as well as in the not-for-profit sector where I have worked with numerous organizations. I have also had the opportunity to work with certified fraud examiners in both the private and public sectors. This paper is not necessarily the summa of my journey in the field of applied ethics; rather it is a series of observations that have impacted my perception on how to do the right thing and do things right.

In my involvement with organizations such as the Ethics Practitioners' Association of Canada² and in establishing a formal ethics program in the Department of National Defence and the Canadian Armed Forces, I have faced a number of important questions. Regrettably, I have not always found suitable and useful answers to these questions. One can only do the best possible with what is available at the time.

It is therefore my aim in this short paper to share some of my observations and questions with the reader in order to stimulate thinking and dialogue on relevant issues of applied ethics. It is my hope that in the ensuing discourse, useful and useable suggestions will come to the fore, thereby assisting those who are focused on improving workplace atmosphere and ethical performance.

In collecting various perspectives, I have drawn on a multitude of sources. Over the years, I have attended numerous conferences on ethics and on leadership as well as participated in discussions at events held by organizations such as:

- The Ethics Practitioners' Association of Canada – L'Association des praticiens en éthique du Canada
- The Canadian Defence Academy / Royal Military College / Canadian Forces Leadership Institute
- The Association for Practical and Professional Ethics (US)
- The Conference Board of Canada
- The Ottawa Round Table on Ethics

BACKGROUND

Humans have been talking about ethics for a long time, yet I am not sure that there is one acceptable definition of ethics. It appears to me that "ethics" and "ethical behaviour" mean different things to different folks. Nevertheless, for the purpose of this paper I have opted for the following definition of ethics: "It is an intellectual process to help us find the best way to live up to our core values and most often to our shared values in our social/cultural surroundings." Ethics is a personal and collective responsibility that calls for leadership, judgement and dialogue.







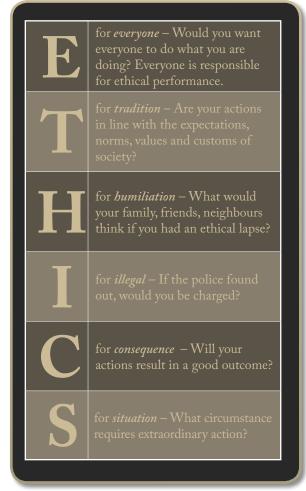






In my view, ethics is using personal and shared values to do the right thing and is a commitment to doing the right thing. Ethics is what you aspire to do. To simplify it to an extreme, ethics is often described as what you do when no one is watching. Here is a simple formulation that I have used in presentations:

ETHICS stands for:



The difficulty appears when you try to put these concepts into practice. Two differing schools underpin different types of organizational ethics programs. One is compliance-based while the other is values-based. Let me paraphrase from a Department of National Defence paper on the fundamentals of Canadian Defence Ethics. Compliance is rule-based. Individuals are

asked to simply obey the law and the rules. It is a legalistic approach and minimizes the decision-making process. Such a system does not promote positive ethical attitude and behaviour. Values-based ethics is more inspirational. It states in general terms what is desirable and allows some latitude in application. People must use their judgement based on their shared values.³

The debate on compliance- versus values-based approach to applied ethics has led nowhere so far because what is really needed is a balanced approach. After all, the legal requirement (obeying the law) is only the mandatory minimum standard. To be a good citizen demands much more than just obeying the law. We need to seek a much higher standard. A friend of mine often says that the law is what you have to do while ethics is what you ought to do.

Nan DeMars⁵ outlines the six levels of moral development that Lawrence Kohlberg wrote about in 1961. They include obedience to powerful authority, looking out for number one, meeting the expectations of the group, preserving the social order, adopting free arguments and social contracts as well as universal ethical principles.

The President of the Ethics Resource Center in Washington, DC recently wrote inter alia: "Not that we needed it, but Wall Street has handed us its latest lesson in the importance of ethics programs and what happens when they are ignored. ... Making regulatory and legislative walls higher probably won't hurt. But neither should anyone assume that staking laws upon laws makes for impregnable defenses. Rogue traders - and mortgage lenders and even some CEOs - will find a way. Remember, Enron [sic] had rules and a picture perfect code of conduct. ... The lesson here is not that crime does not pay, but that organizations have to rely on trust, as well as rules, to safeguard their businesses, customers and stockholders. You set rules for your teenager, but you trust them [sic] with the car keys."6

When speaking of values-based ethics programs, one needs to clearly define what values are. Here again, we find a number of definitions but I tend to use the one adopted by the Public Service of Canada. "Values are enduring beliefs that influence attitudes, actions and the choices and decisions we make." However, like laws and rules, values evolve over time.

In 1995, the UK Nolan Committee outlined the qualities expected from all holders of public office: selflessness (pursue the public interest, not gain for self, family or friends), integrity, objectivity, accountability, openness, honesty and leadership.⁸

Donald Savoie⁹ in his seminal book *Court*

Government and the Collapse of Accountability, published in 2008, makes a number of observations that are relevant to these issues and have greatly influenced my perspective on applied ethics.

During an EthicsCentre.ca presentation on codes of conduct in the private sector in October 2008, Dr. Mark Baetz was quoted on specific values. Baetz focuses on six fundamental values that underpin ethical behaviour. They are: trustworthiness, respect, responsibility, fairness, caring and citizenship. 10 The positive position of ethics in the profession of arms in Canada is that the Department of National Defence and the Canadian Armed Forces have a "Defence Ethics Program" that is well established, comprehensive and sustainable. The Defence Ethics Program lists six core defence ethical obligations: integrity, loyalty, courage, honesty, fairness and responsibility.

Over time, I have observed ethics in practical terms and reflected on its impact from different perspectives.

Social Contract

I found a short anonymous text on the unwritten social contract that exists between an individual and society (or system). By society I mean everything from family through the workplace to a nation as a whole. The two perceptions of needs (or wants) are outlined in Table 1.

Individual Wants	System Needs
Fair compensation and benefits	Productivity (efficiency)
Chance to learn and grow	Cost effectiveness (economy)
Meaningful work	Loyalty (concentration)
Compatible people (shared values)	Innovation (forward looking)
Boss I can respect (trust)	Teamwork (trust)
Reasonable security	Flexibility

Table 1: Unwritten Social Contract

These two groupings can appear to be challenging each other. However, it is possible to balance them such that there is value from both perspectives. The major difficulty arises when they become seriously out of balance, leading to clashes where no one wins.

In a military context there is more to the social contract mentioned above. It is the concept of unlimited liability that makes a world of difference. If individuals voluntarily commit to defend the nation's national security at all costs, there is a need to ensure that they and their families receive the support that they justifiably deserve. This would include ethical and effective leadership, fair compensation and full comprehensive support in case of injury or death. The book *Duty with Honour: The Profession of Arms in Canada*, published by the Canadian Forces Leadership Institute, is very instructive in the matter. 12

Morality

There remains in each individual a sense of morality—of what is right and what is

wrong. This sense of morality has a religious context, a family and social context and even an organizational context that can be explored in depth. A study of morality in diverse groupings may lead to establishing the fundamental values that are shared by all humanity. These can be useful when attempting to establish an ethical basis for dialogue in a multicultural environment.

Individuals

In my work in applied ethics and working with fraud examiners, I have often heard that any human grouping follows a bell curve. At one end, 5 to 10 percent of the people are pure of spirit and action. If they were to stumble on a room full of money, they would quickly lock the door and run to security to report it. At the other end of the curve there is a similar percentage of people who would do anything to get to the money and abscond with it. Between these two extremes are the rest of us. Most individuals are loyal, dedicated and hard working but may need occasional reminders of what is expected. These good people need to be reminded to stay focused on the task at hand and to avoid an ethical accident where individuals as well as organizations may see their reputations damaged and suffer the consequences.

In the military, as in many other groupings, it is the behaviour of the leader that sets the tone. Great military leaders set an example that most want to follow in order to excel. That is not to say that all military leaders are perfect, some use questionable techniques to obtain results. In the main it is what you do that counts and not necessarily what you say. ¹⁴

Integrity

Many use the word integrity in the same sense as ethics. Ethics is a philosophy or way of thinking while integrity is a virtue or quality that an individual possesses, or not. I am inclined to use "ethics and integrity" as a dual approach to doing the right thing and doing things right. In my view, integrity in a person means that you get the total package;

the whole person, who is trustworthy, has strong values that are in constant action and is consistent in their actions and utterances. Some of the values that one expects from such a person include the ability to speak truth to power. Having integrity also implies that the person can be reasonably expected to do what they said, finish the task that the person has initiated, maintain commitments made to others and be accountable. That individual is considered an ethical leader because they actually "walk the talk." Integrity, therefore, means being a whole person who is trustworthy and transparent.¹⁵

Workplaces

Organizations seek to have an environment including a decision-making process that will minimize errors and obtain the best performance out of individuals. In that way, the reputation of the organization will be preserved, if not enhanced; trust will be ensconced throughout; and the corporate and social goals will be met. How that is accomplished makes a world of difference to the workplace atmosphere and performance.

The nature and scope of an ethics program determines how this will be done and what success will accrue. However, no ethics program will be successful if the tone-at-the-top is neutral or negative. It is a question of ethical leadership that is missed by many through indifference or lack of understanding of what makes an organization the best in its field.

Ultimately, it is the judgement of our ethical efforts by others that determines our trustworthiness. Ethics is doing the right thing while good management is doing things right.

OUESTIONS

The fundamental question that will emerge in the remainder of this paper is, "why, with all our knowledge of ethics do we still have recurring ethical lapses?" We are, after all, human but might we do better? I have elected to open four windows into our communal behaviours.

Workplace Observations and Questions

My observations below are focused on garrisons (i.e., a relatively stable environment), not in the field of human conflict or operational stressful environment where there is little time for decision making. As I observe individuals in these garrison workplace environments, I note that they have tight timelines that must be dealt with. The issues that they are faced with are often laced with ethical dilemmas, not the major kind perhaps but stressful nevertheless. I also note that the pressures are not relieved with the data at hand. In fact, they appear to suffer from data overload (Blackberry ringing, cell phone vibrating, pager going off and dozens of irrelevant emails). The sum of all this is that they have precious little time to focus on the task at hand and the consequences of their decisions and their acts.

Yet, in a military context, decisions made in garrison (base or headquarters) can have life and death impact in military operations. Thus the importance of always keeping focused on what the task is all about.

Savoie mentions that the 2004 Office of the Auditor General Report highlighted "six root causes of management problems in government: losing sight of fundamental principles; pressures to get the job done that compromises program integrity; failure to intervene to correct or prevent problems; a lack of consequences for inadequate management; a lack of organizational capacity to deal with risk; and unclear accountability."¹⁶

When pressed for time and overwhelmed with data in a poisoned workplace atmosphere due to poor leadership or lack of defined shared values, individuals often reach for the goal without adequate ethical analysis and find themselves in trouble. The aim does not justify the means employed in many cases, and a disregard for our shared values has resulted in

failure to reach the mid- to long-term goals of the organization. When the boss says: "I don't care how you do it, just get it done," it is time for a very careful analysis of what is at hand.

Most of my focus has been on the workplace and its atmosphere. This is largely due to the number of times that I have met individuals who were working in a poisoned environment. When discovering issues of abuse, misuse, fraud or worse I have discovered that inevitably the workplace had a terrible atmosphere.

When a problem is observed, what is an organization member's obligation to act? Is there really a risk to your livelihood if you report potential wrongdoing? We know what the law demands but what do our values say to us? These are terribly difficult questions to answer in the reality of the workplace. They are useful in starting a meaningful dialogue on ethics.¹⁷

I have observed that in some very large organizations mixed messages are being sent. The recruiting system is aimed at attracting and hiring good people. The system is looking for people who understand and live virtue ethics. However, having hired them we place them in a compliance-oriented workplace. We incessantly tell them to use their judgement but the actions of the leadership of the organization clearly imply that errors are not tolerated. There is an active blame game going on. When you have a compliance environment where you seek absolute flawless behaviour from individuals coupled with very harsh sanctions, you end up with very scared and timid members where many either break or leave.

Savoie makes two observations that are relevant: "Civil servants who have learned the art of lying low and not drawing attention to themselves or to their units from either the media or politicians will survive and flourish."¹⁸ "It is not too much of an exaggeration to suggest that accountability in government is now about avoiding mistakes, even the most trivial ones, so as not to embarrass the minister and the department."¹⁹

My fundamental questions are: Why do we still have to raise these issues? Why is it so difficult to deal with them? Is this a human nature issue, a cultural issue or a moral issue? For example, media forms public opinions that, in turn, form the basis of popular pressure on politicians, yet maintaining high journalistic ethics is a challenge when dealing with infomercials media aimed primarily at increasing circulation or viewership.

Members of the media bristle at the suggestion that ethics is being disregarded when preparing "stories." Yet we often see reports that mix news and opinions or that present opinions as news. Misquotations are corrected in the fullness of time, and often on the back page of a paper. Then there are the banner headlines that catch your attention but have little to do with the gist of the story that follows. How about checking sources before going to print or on air? Are the facts still verified as they were decades ago? Is the subject of ethics in media taught at schools of journalism?

Some journalists who have been embedded with Canadian military units have highlighted ethical issues that they had to deal with such as how much personal information to divulge in a story. When do you release the information you have gleaned? Do you share your insights with the local commander before going public? These are only a few examples of the issues raised.²⁰

From the other side of the coin, how much private and personal information/opinions do members of the Forces share with embedded journalists?

Perhaps we can oversimplify a concern of mine by looking at what happens when an ethical "event" occurs. In any "crisis" the media and the population like to quickly identify the miscreant regardless of the evidence or lack thereof. Another issue has to do with the concept of being innocent until proven guilty which is often reversed because of the state of the "victim."

Out of the morass should come a "saviour" or rescuer to save the day. This is what the media believes it is doing. The three elements of the villain, the victim and the saviour are simplistic. However, it is what sells papers and/or airtime and gives media such as blogs exposure; therefore, oversimplification at the expense of justice increases our collective cynicism.

Here again Savoie wades in with: "... the media are mostly interested in the drama of individuals and are in a constant search for winners and losers to make good headlines." 21 "... [O]nce a scandal hit the front page of the newspapers or came to dominate evening news on television, politicians were always quick to call for new centrally prescribed rules to guide the delivery of public services and the work of civil servants." For MPs, accountability is about politics – about assigning blame and scoring political points in the media." 23

National Security and Ethics

Our society is currently facing ethical issues under the heading of national security. We claim that what we want is peace, order and good government, but we are often unable to articulate what that means and what Canadians truly cherish. It becomes a difficult articulation of our shared values.

The first thing that we ought to do is define national security; the best one that I have ever seen is the definition given by Brigadier-General Don Macnamara (Retired) at the National Defence College circa 1986. He defined national security as "the preservation of a way of life acceptable

to the Canadian people and compatible with the needs and aspirations of others. It includes freedom from military attack or coercion, freedom from internal subversion, and freedom from the erosion of the political, economic, and social values which are essential to the quality of life in Canada." However, it raises the need for another definition, that of national values. What are Canada's values and who accepts them?²⁴ Finally, the linkages between sovereignty, national values, national interests, national security, foreign and defence policies and ethical intervention must be exposed to understand their impact on important policy development.

Of note, a definition of war can be confusing because you have to clearly understand the spectrum of human conflict that ranges from road rage through peacerestoring operations to all-out world war. Then there are the concepts of a just war, which has been the subject of discussion since Cicero, St. Augustine, St. Thomas Aquinas and many philosophers to this day. It focuses on three aspects of conflict: a just cause for entering into war, acceptable behaviour during warfare and a process to end the war. In addition, there are the Geneva Conventions of 1929 followed by the third edition in 1949 that deal with the handling of prisoners of war and the treatment of individuals in conflict. The challenge today is how to apply these principles to non-state actors such as terrorists. The changing face of battle coupled with the current use of defence, diplomacy and international social development raises new sets of questions such as what is the place of non-state actors in the spectrum of conflict and the clash of cultures.

My observations are that those who understand issues relating to national security, national values and national interests often cannot manage the situation because they frequently have no power; those who could manage the issues don't necessarily understand the scope and complexity of these issues. For example, politicians may use inflammatory rhetoric for local effect without regard for external interpretations of their intemperate

comments. Countries and people regard each other through different sets of lenses; thus, intentions can be easily misinterpreted. As reported in *The Economist* in July 2007, "An uncompromising Iran and an uncomprehending America may be stumbling to war ..."²⁵

Islamo-terrorists promote the concept of humiliation and the frustration that results from their perception of victimization and loss of social influence. They seek vengeance for perceived humiliations, use inflammatory semantics and sophism, and commit acts of extreme destruction. It is also evident that they seek a return to 12th century human and social conditions. Yet, they do not hesitate to use computers, the Internet, motorized vehicles and sophisticated electronic devices in their weapons of terror. Terrorists vocalize an empty rhetoric in pursuit of their goals that are to strike terror for the sheer delight of causing mayhem and to feel important. The Ottawa Citizen opined in an editorial on 28 November 2008 that:

Terrorists who kill in the name of Islam don't need "motives." They kill because, in their view, they have a religious duty to do so. The hijackers who orchestrated the 9/11 attacks on the U.S. never issued demands. Killing, for them, was an expression of faith.²⁶

The American government, aided by its media networks, is in a state of fear and terror that has often led to anger, paranoia, xenophobia and over-reaction. This has further led to a serious restriction of freedoms and disregard for some existing laws. This is contrary to the fundamental principles of the American constitution and social structure. The remainder of the Western World has responded to terrorism in a variety of ways that are generally more muted and restrained.

When it comes to Afghanistan the following emerges: There is an unwillingness to take the time and effort to consider the elements of the issue such as women's issues, damaged infrastructure, disparate social elements,

organized crime, corruption, education, health and the effectiveness of the UN and NATO.²⁷ Quebec isolationism and Canadian dislike of the US Bush administration do not permit an informed dialogue on many global issues. There does not appear to be Taliban leadership available to negotiate with. (To be a leader one has to control forces at hand, which is doubtful in a warlord structured society as in today's Afghanistan.) Extremism and confused world powers make the whole environment perplexing.

Where does ethics fit in all this? There is a crying need for informed dialogue where it is important to not only keep the tone of the dialogue civil, but also to avoid extreme and/or dogmatic semantics; ensuring that respect and integrity prevail. Thus, the importance of using logic in the dialogue on issues as Habermas suggests. The use of fundamental international values such as respect, truth, integrity is critical. Finally, there must be an absolute condemnation of terrorism in any form.

My questions are:

- How much freedom do we sacrifice to ensure what we think of as security?
- What are our responsibilities as free citizens?
- Who determines the limits of actions by the state? That is, who is ultimately responsible?
- Is it true that the higher we go the more diffuse responsibility gets?

Ethical Leadership

In any organization there are shared values, stated or not, that drive people to behave in certain ways. If the organization is to succeed there is a need for leadership and management. I see leadership as a means to get people to do something that you want done. Effective leadership will result in people going the extra mile for you and for the organization. That is why leadership is a critical element for success. It is also why the

effective leader will ensure that the shared values always remain in focus.

The leader gets people to do what is required by following their example, thus the need to set the correct tone at the top of the organizational pyramid. In addition, we are all role models to someone regardless of where we stand on that pyramid; thus, the need for open dialogue on the shared values and requisite behaviours. The bottom line is: "Walk the talk!"

Lee Iacocca highlights the nine "Cs" of leadership as: curiosity, creative, communicate, character, courage, conviction, charisma, competent, and common sense.²⁹

In the last decade the Canadian Forces has published numerous books, pamphlets and papers on the subject of ethical leadership. I would draw the readers' attention to this extensive reading list.³⁰ My starting point would be *Duty with Honour* and then I would apply the values and program activities found in the comprehensive and excellent *Defence Ethics Program*.³¹

Over the years I have met many leaders of all sorts, some good, some just OK and some that I swore I would never emulate. One who left an unforgettable positive impression on me was the late Air Commodore Leonard Birchall, OC, OBE, DFC, CD, OOnt.

It is said that Winston Churchill dubbed Air Commodore Birchall "The Saviour of Ceylon" because he had given warning of the approaching Japanese fleet before he was shot down and became a prisoner of war of the Japanese. His story of torture and slave labour is horrific, but it also highlights the need for effective leadership based on strong values when survival is at stake.

Birchall spoke eloquently about leadership, which he found was based on three major characteristics: as an effective leader, you have to have character; your personal values have to be firmly engrained into your personality; and you have to focus clearly on the shared values of

the group. In addition, he held that competence was a critical element for the simple reason that no one wants to follow an incompetent, save out of shear curiosity. Finally, comradeship is a valued characteristic of leadership. The human touch is key to developing an esprit de corps that will allow people to go the extra mile. In the circumstances of prisoners of war, comradeship became a pure element of survival. There are many other examples of ethical leadership under duress.

To any person wishing to lead I would recommend reading his lecture on leadership. Allow me just one quote:

Incidentally, the most succinct definition of leadership I have ever heard is being able to tell someone to go to Hell and have them [sic] look forward to the trip. If you ever have to lead troops into combat, and I pray this will never happen, you will find that you appear before your men/women stripped of all insignia and outward signs of authority to command. Your leadership is judged not by your rank, but by whether your men/women are completely confident that you have the character, knowledge and training that they can trust you with their lives. Now men/women are shrewd judges of their leaders, especially when their lives are at stake, and hence your character and knowledge must be such that they are prepared to follow you, to trust your judgement and carry out your commands.32

In my observations, effective leadership needs three key elements. The most important one is that of trust. If the individual is not trustworthy for whatever reason (lack of shared values, competence, etc.), no effective leadership is possible. This trust must be lateral and vertical regardless of the management/rank structure. Employees, peers and superiors must trust the individual. There is also a need to be loyal laterally and vertically as well. However, loyalty is somewhat dangerous because being overly loyal and protective of

a group may result in a lack of transparency leading to ethical lapses. It is important to avoid blind obedience to power and to overprotection. Finally, for an organization to be ethically led means that there is effective leadership at all levels. I hold firmly that it is individual ethical behaviour that sustains the positive reputation of any organization.

We are dealing with human beings with their attendant frailties. Errors occur and it is important that lessons be learned from these mistakes in behaviour and leadership. Playing the blame game is not very useful in this context. I remember military leaders who held themselves above the rules of the organization and believed that they could do whatever they wished. A few got away with it but none could hide it. Their behaviours hurt the organization and the profession of arms.

Those who rely on an old wasted saying of "rank has its privileges" are waving a red flag indicating a likelihood of abuse and misuse if not even fraud. There are privileges that come with position and rank, but these are well defined often based on simple courtesy. Misuse and abuse is seldom invisible, and it usually emerges into the public eye in the fullness of time.

A reading of the Auditor General 2003 Special Report to Parliament on The Office of the Privacy Commissioner³³ highlights the failure of leadership from a bully. It is a classic description of how to ruin the workplace atmosphere and reputation of a public organization. Then, there are the numerous varied cases of fraud in organizations. The conclusion that I draw is that in this current electronic environment it is very difficult, if not impossible, to act unethically and not have it observed by a number of people.

All these errors and crimes lead me to ask: "Why do these things occur?" In my opinion, many occur because of a lack of focus on values. I also wonder why peers or other members of the organization do not stop these people before it ruins everybody's reputation.

Ethical Decision Making

It is difficult to be an effective ethical leader in the current high-pressure environment with its many pitfalls. How we decide what course of action we will follow is often complex and difficult to resolve. Some of it may appear to be relatively simple, but we face some interesting challenges. I now turn to the decision-making process we each follow in our daily life. Keep in mind that ethics is doing the right thing, while good management is doing things right.

Much has been written about decision making. I find most of it applicable to an environment where there is time for contemplative analysis thus the process can be thorough. I am thinking of public policy writing or program development for example, but we often do not have the luxury of time. Think of the police officer facing the armed demented individual wishing to be shot, but who poses a real danger to society. What the officer does next is not the outcome of a lengthy analysis and dialogue with civil society. It has to be assessed, evaluated, decided and executed in a matter of minutes, even seconds.

There are many military examples of ethical decision making. There is one that I find particularly illuminating. On 25 April 1944, HMCS Haida, under command of Commander Harry DeWolfe, stopped in the English Channel after contact with German destroyers to pick up survivors of the sunken HMCS Athabaskan. (DeWolfe became Chief of Naval Staff and HMCS Haida is now alongside in Hamilton.) The best narrative of the Captain's decision, against orders, to rescue fellow sailors is contained in "The Canadians at War."34 Other descriptions of military decision making can be found in Christie Blatchford's Fifteen Days or in Carol Off's The Ghosts of Medak Pocket.

My approach is based again on observations and suggests an increasing level of analysis depending on the circumstances.

For example, I start with a quick sniff test to see if there is the potential for an ethical dilemma and consequences of note. I ask:

- Is it legal?
- Is it ethical?
- Is it reasonable?
- Is it defendable?

Obedience to laws is a minimum standard. The law tells us what we **must** do while ethics tells what we **ought** to do.

Linda Treviño and Katherine Nelson remind us that our gut is also important. In the second edition of their work *Managing Business Ethics* they highlight eight steps to sound ethical decision making in business—one of which is checking your gut. They also state that empathy is an important emotion that can signal awareness that someone might be harmed.³⁵

If something does not feel right then another look is required. The gut reaction and the sniff test will likely determine if you need to review the situation in depth. The required analysis then becomes more elaborate, and many authors have offered their approach to ethical evaluation. They appear to all follow some relatively similar path and ask similar questions.

In a 2007 paper, Cornelius von Baeyer of Ottawa highlighted the need for the decision to take into account the four pillars of ethics: rules, consequences, values and discourse. Indeed, duty-based ethics demand compliance with the rules—my "is it legal?" Results-based ethics ensure maximizing outcomes; values-based ethics ensure making integrity come to life; and, discourse ethics ensure reaching good decisions.³⁶ It would seem to me that decision making is complex and must be practiced to hone the required skills. It is important therefore to define the problem; identify rules, desired

outcomes and values; establish consultative dialogue; make the decision; and follow-up. In military operations speed is of the essence, as is accuracy. Common sense and drills come into play, often with life and death results.

All these authors and I have stressed that in resolving ethical dilemmas or challenges to our values, we must ensure that we know:

- What the facts are.
- Why we have a potential or real problem.
- What our obligation to act is.
- What alternatives are open to us.
- What the consequences of our actions or inactions are.
- Who we should speak to about the issue(s).

The Defence Ethics Program offers guidance on dialogue by making an intranet site available on the subject, issuing an annual Canadian Forces General message (CANFORGEN), making presentations, ensuring that there are Level 1 plans and engaging senior leadership. In addition, the Defence Ethics Program offers specific guidance on decision making by reminding members that they must assess the situation (who, what, when, where, why and how), develop options, assess risks, consider values and ethics, select a course of action and act upon it.

Let me add a note of caution. When dealing with ethics and ethical decision making, one must avoid paying too much attention to delaying comments or excuses such as:

- It is not illegal.
- We have always done it this way.
- Everybody does it.
- It is the only way to achieve the expected results.
- This is how we can say "thanks" to the members.

- It will be beneficial to the organization.
- No one will be hurt.

A Final Thought

The "self" is the focus of our daily interaction as individuals living and working in organizations in a social context. To function we need to work with others and balance our needs with those of the group and of our society. This forces us to deal with organizational cultures and often face a clash of values. To function effectively and to ensure a positive workplace atmosphere, we must make ethics in organizations alive and buoyant, thus the need to harmonize our values with those of specific organizations and society as a whole.

The reader will have understood by now that it is important to know not only where we, as individuals, come from but also the social, cultural and religious biases that drive us. In other words, we need to first identify our personal fundamental values such that we are able to establish our requisite behaviours in order to lead effectively. I have always said that it is important to brief what you are about to do, then do what you have briefed. While acknowledging that it is not easy to be a good leader, a military acquaintance recently said: "I mean what I say, I say what I mean, and I do what I said."

It is important for individuals to get actively involved in positive ethical behaviours by ensuring that there is time available to think, to achieve ethical decision making and to provide effective leadership.

In our current social environment, the big challenge that remains is that some people appear not to care about organizational ethics but appear more self-centered as they put self before community. It is interesting to note that the Defence Ethics Program clearly states as its principles "serve Canada before self" and "respect the dignity of all persons." Perhaps we could consider that as a personal motto.

CONCLUSIONS

At the start of this paper I alluded to a number of leaders that I observed and to the human condition that drives our actions. My observations lead me to believe that most folks are well intentioned but often face formidable circumstances that distract them from the ethical path of doing good. We wish to do the right thing and do things right, but we are not always successful. That led me to ask some fundamental questions. It remains my hope that this paper may continue the fruitful dialogue on values, integrity and ethics that has been implanted in the Forces and its civilian associates.

We live in a complex and dangerous world where we are often in need of guidance. To that end, I am left with some fundamental questions, some of which must be discussed while others should be discussed:

- What are the shared values of my Canada, my social environment, my workplace, my family, and are these values underpinned by a specific dogma?
- What are my personal values?
- Was managing behaviours and social expectations better in the days of a perceived unique Western culture?
- Walk the Talk. Why is it so difficult to do?
- How can we each, personally, make a difference?

It still remains that we need to individually and collectively decide if these are the most important questions. Are they the best ones to sustain a dialogue or will they tend to close the conversation? Perhaps we can augment these by using case studies / examples from actual workplace and operations dilemmas.

Major-General Marc Terreau (Retired) CMM, CD had a lengthy career in air mobility culminating in command of Air Transport Group. A proud graduate of National Defence College, he spent the last six years of his career in National Defence Headquarters as Chief Review Services where he initiated an ethics programme applicable to both the Canadian Forces and civilian members of the Defence Team. Later he became a consultant on applied ethics, chair of the Ethics Practitioners' Association of Canada, a dedicated ethics practitioner, a member of the Air Command Advisory Council and the Honorary Colonel of 429 Squadron. He continues to do volunteer work in various sectors of Canadian society.

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Reprint from The Canadian Royal Air Force Journal Vol. 1, No. 2, Spring 2012



debates regarding the use of air power revolves around whether it can decisively win wars by coercing adversaries to accede to a nation's or coalition's will. While many theories of air power employment insist that strategic attack, where the adversary's centres of gravity and will to fight are the main targets, is the best path to victory, other military theories espouse that only battle winning, and the seizing and holding of territory can achieve victory.

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Ideally, Service preferences should not drive the "ways" of warfare. In a truly joint environment, the strategic objectives, the most effective ways to achieve those objectives in the given situation, and the available means to achieve them (involving all elements of both national and military power) should determine the most suitable strategy. Coercive

strategies, aimed at affecting both the adversary's will and capability, can be effective tools in the strategist's toolbox to contribute to the achievement of strategic objectives involving the prevention of war, and if necessary, the prosecution of war.

This paper aims to describe what coercion, coercive diplomacy, and coercive force are, the types of coercive strategies and their goals, and how air power contributes to the achievement of these goals. It will also describe counter-coercion, offer some lessons learned from the analysis of air operations that have successfully contributed to coercion of an adversary, and take a look at air operations in Libya as an example of air power's contribution to coercion.

Coercion, coercive diplomacy, and coercive force

The Macquarie Dictionary defines "coerce" as: "to restrain or constrain by force, law, or authority; force or compel, as to do something or to compel by forcible action: coerce obedience," and "coercion" as "the act or power of coercing; forcible constraint or government by force." So by definition, coercion implies the use of force to compel someone to do something. In the military context, it is sometimes defined as: "Coercion is the use of threatened force, including the limited use of actual force to back up the threat, to induce an adversary to behave differently than it otherwise would."1 It is also defined as: "Coercion, in its broadest

Editor's note: This article originally appeared in the Australian Defence Force Journal, no. 186, 2011, and the original spelling conventions have been retained.

sense, is causing someone to choose one course of action over another by making the choice that the coercer prefers appear more attractive than the alternative. In the international arena, coercion is usually intended to change the behaviour of states...." While the common thread in these definitions involves influencing an adversary's behaviour, it is the threatened use of force or limited use of actual force that causes this influence.

Diplomacy is defined as "the art and practice of conducting negotiations between nations." (Merriam-Webster Dictionary). Coercive diplomacy would therefore be the art and practice of conducting negotiations between nations using threatened or actual force. This force could be generated from any or all of the four elements of national power informational, military, diplomatic, economic. If this force is military force, then the term "gunboat diplomacy" is sometimes used. "Although the term 'coercive diplomacy' has come to be associated primarily with military force, coercive diplomacy best describes a nation's coercive use of the four pillars of national power in the foreign relations arena."3 While it is appreciated that all forms of national power can contribute to coercive diplomacy and influence the behaviour of an adversary state, this paper will focus on the coercive use of military force, and in particular, the air power element of military force.

Types and goals of coercion

Before looking at how air power can contribute to coercion, it is important to appreciate what types of coercive strategies exist, and what are the goals of each of these strategies. While diplomatic effort or military campaigns can and do employ multiple ways to achieve their defined ends, knowing what these ways are meant to achieve and selecting the most appropriate ones for the situation at hand are key to their successful employment.

The two major categories of coercive strategies are deterrence and "compellence."4 While these two concepts are related, in general, deterrence aims to prevent an adversary from doing something he would otherwise do or want to do, while compellence aims to alter behaviour already commenced or force an adversary to do what the coercer wants him to do. It is recognised that a significant amount of academic debate surrounds the inclusion of deterrence as a form of coercion. While deterrence is often viewed as a passive act, relying on the adversary's perceived belief or fear of destructive retaliation by the deterring force or nation, and coercive force or compellence is viewed as an active act that relies on the effectiveness of the coercer's methods, this author believes that the goals of deterrence and compellence are the same: to affect the behaviour of the adversary, one through fear and one through threat or use of force.

Deterrence can truly be said to be "in the eye of the beholder" and it most often involves the threatened use of force (not the actual use of force). It is aimed at the adversary's will to commence hostilities, not at his ability to fight. For a deterrent to be deemed effective, it must cause the adversary to decide to forego initiating a possible action. The adversary must believe that the deterring force is capable of inflicting an unacceptable level of destruction on the adversary's military force or nation, and the deterring nation's willingness to inflict such destruction. Interestingly, a deterrent based on a perceived (but not actual) threat can be completely effective, while an actual threat of which the adversary is unaware is of no deterrent value at all.

Peacekeeping forces, stabilisation forces, and carrier battle groups are examples of military missions or capabilities used for deterrence of potential aggression or compellence (coercive force) should hostilities break out. Sometimes referred to as representing a coercive military presence,⁵ these forces have the capability, mission, and defined methods

of escalating their response to aggression that includes the use of force. Even unarmed personnel and observation technologies that have the capacity to view and report adversary action may act as a deterrent if the information they report could be damaging to the adversary nation's reputation or efforts and incur negative political, diplomatic, or military reactions.

Compellence can involve the threatened or actual use of force, ranging in scale from mildly influencing the adversary's will to physically removing the adversary's means to accomplish his goals and to resist coercion through isolation, capture, and/or destruction of his forces. Seizing, holding, and controlling the adversary's nation are the ultimate ways of compelling an adversary to behave in a prescribed manner. The spectrum of compellence therefore ranges from strategies to affect the will of the adversary to strategies that aim to destroy the adversary's ability to accomplish his goals and resist the coercer's will.

The spectrum of compellence can be described (see Figure 1 below) using three strategies: punishment, denial, and destruction. Military campaigns can employ lines of operation that use more than one of these compellence ways, and most likely will employ elements of all three.

Punishment strategies are designed to target the adversary's will to continue to fight or to continue to behave in a certain way. They seek to increase the costs of resistance or noncompliance with the coercer's will, and can be directed against anything the enemy values, including military forces, economic wealth, national infrastructure, or international influence. While early air power theorists like Douhet viewed adversary civilian populations as valid targets for aerial bombardment, history has not shown appreciable evidence that the bombing of civilians has significantly decreased an adversary nation's will to fight, nor is it considered a legally, ethically, or morally justified strategy in the post-Second World War (WWII) era. Punitive coercion is intended to invoke the fear of future pain in the adversary's key decision-making apparatus.

Denial strategies are aimed at affecting the adversary's desire and ability to achieve their objectives. The purpose of these strategies is to reduce the likelihood that the adversary's pursuit of their intended objectives and their resistance to the coercing force's efforts will be successful. If the adversary is primarily using its military forces to achieve its objectives, denial is most often achieved by attacking the adversary's military forces, the means to generate those forces, and other systems that move and sustain them. 6 Denial strategies seek to affect the will of the adversary by invoking a feeling of hopelessness due to the physical removal or degradation of the key adversary means being used to pursue their goals.

Destruction strategies are simple in concept, but may be extremely costly to both adversary and coercer alike. They are aimed at eliminating the adversary's capabilities. While there are psychological effects associated with

Coercive Strategies



Figure 1. Spectrum of compellence

the loss of capability through its destruction, the aim of destruction is to remove options, and to leave the adversary without the means to resist and with no choice but to comply.

The coercive use of air power

Air power is a form of military power ideally suited for coercion. Considering its flexibility and its potential for concurrent application on many different types of missions, air power can be employed in various ways, for a multitude of purposes, to simultaneously achieve many different and complementary effects. By taking the air campaign approach to joint air operations, air power can concurrently deter and compel adversaries, in a scalable, variable manner, with minimal footprint in a contested operating environment, with great effectiveness and survivability.

Air warfare theory has largely been focused on using air power to affect the will of the adversary. The original air power theorists were typically army officers who had converted to their respective air arms during the First World War (WWI). Shocked and appalled by the huge cost of human life in attritionist trench warfare during that conflict, their thoughts turned to alternative warfare strategies. Hence, early theorists like Douhet, Sherman, and Mitchell professed that the object of war was to destroy the enemy's will to fight by attacking their infrastructure and heartland, rather than their fielded forces.7 Later, Slessor took a more balanced view by realising that in addition to strategic bombing, interdiction of the adversary's battlefield supply system and supporting land forces were also important contributions air power could make to warfare. Slessor, a product of the fledgling Royal Air Force in WWI, was the first air power theorist to take a truly joint view of warfare.8 Colonel John Warden, one the most noteworthy air power theorists of the modern era, like the early theorists, was also a proponent of strategic attack. Warden's view differed slightly in that he saw the enemy as a five-ring system, where each

ring represented groups of thematically bound centres of gravity. At the bullseye of the rings was the enemy leadership, which represented the highest priority target for air power. The outermost and lowest priority ring was enemy fielded forces. Warden's ultimate goal was to force the enemy to comply with friendly objectives:⁹

At the strategic level, we attain our objectives by causing such changes to one or more parts of the enemy's physical system that the enemy decides to adopt our objectives, or we make it physically impossible for him to oppose us. The latter we call strategic paralysis.¹⁰

All this is to say that air power theory has been relatively consistent since the first theorists put pen to paper in the early 1920s. It has been very much focused on coercing the adversary's will to fight, rather than using its brute force purely for the destruction of his fielded military forces, although the methods used to coerce the adversary's will have varied with time and theorist. While some espouse that air power is best suited for one coercive strategy or another, it is the inherent versatility and flexibility of air power and its offensive nature that enable it to contribute effectively to most, if not all, strategies.

Recognising the differences between theory and practice is important. Air power has inherent characteristics and capabilities that when postured for use or when employed may create many effects, some intended and some not intended. For example, destruction can adversely affect the adversary's morale and will to fight, but excessive destruction can turn fear into resolve (increase determination to resist). The application of force will incur many effects simultaneously, and to say that you can employ a specific air power capability in the context of a specific coercive strategy and achieve a single desired effect is unrealistic. The situation in which the coercive force is applied, and the combination of many positive and negative influences both internal and external to the adversary force, will ultimately determine the degree to which the adversary's will is affected. When accessing the effectiveness of air power or air power effects to coerce, it is more realistic to speak of expected or intended effects and contributions to coercion, as opposed to drawing absolute causal linkages between air action and changes to adversary behaviour.

Air power and deterrence

The characteristics of air power make it a particularly effective and economical deterrent force. Speed, reach (in some cases global reach), responsiveness, flexibility, and penetration enable a relatively small force, centrally located, to quickly forward deploy, posture to dissuade or counter aggression, or conduct destructive, retaliatory strikes if necessary. If the reach of this force is global, then the deterrent effect becomes location independent. If the air power force is sufficiently robust (reasonable size, containing world class capability), the deterrent effect becomes adversary independent. While most air forces do not possess true global reach and dominance in all air power capabilities, the deterrent effect of medium and small air forces will likely be regional in nature and dependent on both the adversary strength and the type of situation presented.

Air power and compellance

The missions that air power elements undertake can produce multiple effects at the tactical, operational, and strategic levels of war. While air power can conduct control of the air operations aimed at preventing adversary air power from influencing friendly force operations, it achieves this objective by concurrently conducting offensive missions (offensive counter air) to destroy adversary air power capability either in the air or on the ground and defensive missions (defensive counter air) to deny the adversary's ability to achieve its air objectives in friendly airspace. Strike missions like air interdiction (AI) are generally employed to destroy targets on the

ground, but these strikes can be tailored to maximise demoralisation (will to fight) effects as well. The following paragraphs illustrate how air power can be or has been employed to achieve coercive effects.

Air power and punishment strategies

The characteristics of air power and the experience of air warfare have led many theorists to conclude that air power is fundamentally a strategic force with the inherent ability to strike targets of high strategic value. However, in the history of warfare to date, there is not a large body of evidence that says that strategic air attacks, by themselves, have directly coerced a regime to capitulate or appreciably accede to the coercer's demands. What can be stated is that there are examples of where air power has contributed significantly to a coercive diplomacy or a coercive force strategy.

As previously stated, the goal of a punishment strategy is to use the fear of future pain as the motivator for a change in behaviour. Perhaps the best example of this was the use of atomic bombs against Japan in August 1945. While the real and growing threat of invasion was also, undeniably, a coercive factor in influencing the behaviour of the Japanese leadership to change from resistance to compli-

ance, the use of atomic bombs, and more importantly their continued potential use, was the tipping point:

The continuing [United States] US strategic bombing campaign, culminating in the atomic strikes against Hiroshima and Nagasaki, brought about Japanese surrender prior to an invasion. During his radio address to the Japanese people on Aug. 14, 1945, Emperor Hirohito was clear in recognizing the

role of the atomic bombs in his decision to surrender. Although casualty projections for the scheduled land invasions are debatable, the atomic strikes undoubtedly saved hundreds of thousands of Allied lives, as well as millions of Japanese lives, both military and civilian.¹¹

A more recent example of air power's contribution to a coercive diplomacy strategy

using punishment methods is Operation ALLIED FORCE and its air campaign over Serbia and Kosovo in 1999. While this campaign also employed significant elements of denial and destruction strategies, ultimately, the gradual increase in air attacks on

targets in Serbia increased the pressure on Serbian leadership. When this coercive force was considered alongside the coercive presence of regionally deployed ground troops, and coercive diplomacy isolating Serbia from its presumed allies, it was enough to cause the Serbian leader, Slobodan Milosevic, to accede to the North Atlantic Treaty Organisation's (NATO's) demands:

[A]ir power might best be thought of as the force driving Milosevic into a deadend [sic] corner and threatening to crush him against the far wall. But had NATO not remained unified, Russia not joined hands with NATO in the diplomatic endgame, and the alliance not begun to develop a credible threat of a ground invasion, Milosevic might have found doors through which to escape from the corridor despite the aerial punishment.¹²

It should be noted that, although air warfare theory sometimes states that punishment strategies or targeting adversary leadership (decapitation) can lead to a severe loss of morale, regime change, or capitulation, some prominent theorists argue against this idea. While Warden's five-ring theory places leadership at the centre of the enemy system and represents the highest priority target, Robert Pape states:

Decapitation, like punishment, is not likely to topple governments, by fomenting either popular rebellion or a coup. Air attack is a weak instrument for producing popular rebellions, mainly because conflict with a foreign power typically unleashes political forces (such as nationalism and fear of treasonous behaviour) which make collective action against even unpopular regimes unlikely until the opportunity for military victory has been lost.¹³

Air power and denial strategies

While coercive strategies based on denying the adversary's achievement of their goals seem like a compromise between punishment and destruction, they arguably represent the most complementary blend of desirable characteristics of each. Denial strategies recognise the interconnection between destruction and the will to fight. Air power, using its ability to range throughout the battlefield and deliver large-yield weapons with a high degree of accuracy, day and night, has proven to be a very effective weapon in using destruction to change the will of an adversary. Denial strategies are aimed at inducing a feeling of futility or hopelessness in the adversary. While punishment strategies aim to target any centre of gravity the adversary values, in denial strategies, coercive force is normally applied to the primary mechanisms used by the adversary to achieve their objectives. For adversary military operations, this mechanism is most often the adversary's fielded military force, including their supplies, lines of communication, and command and control (C2) centres.

The most striking example of the effect of air power on fielded military forces was the Gulf War in 1991. Of the estimated 400,000 Iraqi troops deployed to the Kuwait theatre of operations, more than 160,000 deserted before the commencement of the ground offensive, while over 80,000 more surrendered during the 100-hour ground campaign. While it is acknowledged that more than just air power was a factor in this, it was a significant one.

Strikes on enemy ground units were the air campaign's most significant contribution to the war. This use of air power-which did not rely on the spectacular new "smart weapons" but on traditional "dumb" iron bombs employed in mass—reduced the Iraqi army in Kuwait to a frightened and ineffectual fighting force. The result was light opposition, non-engagement, or surrender by Iraqi units and low casualties on both sides during the ground war. Air power had demonstrated most convincingly thatskillfully employed under the right conditions—it can neutralise, if not completely destroy, a modern army in the field.15



The ability to coercively affect fielded military forces from the air is dependent on the situation. Large forces in prepared, static defensive positions like those used by Iraqi forces in Kuwait were susceptible to air strikes. Dispersed Viet Cong forces in Vietnam were much less susceptible. What can be gleaned from examination of the use

of air power to inhibit the adversary's achievement of their objectives through the use of coercive denial is that the psychological effect of attacking fielded forces can at times be the dominant effect and it is often the most underappreciated:

An Iraqi officer told his interrogator that he had surrendered because of B-52 strikes. "But your position was never attacked by B-52s," his interrogator exclaimed. "That is true," the Iraqi officer replied, "but I saw one that had been attacked."

Air power and destruction strategies

Air power has the ability to effectively destroy adversary targets wherever they can be detected. What makes air power well suited to eliminating the adversary's means of conducting warfare is its inherent ability to seek out and locate targets, and then rapidly send attacking forces to where the targets are. In addition to holding expertise in conducting devastating campaigns against a broad range of deliberate targets, air power has also developed the ability to bring aerial fires onto emerging, dynamic, or mobile targets equally effectively. While air power planners and strategists acknowledge that certain conditions are more conducive to air attack than others, and that air power is not the sole means of delivering destructive power to the battlefield, the sensors, intelligence resources, situational awareness, and C2 systems, and precision air weapon systems now being employed enable unprecedented levels of responsiveness and destructive capability on the modern battlefield. The battle of Khafji, the only postinvasion offensive operation conducted by the Iraqi forces during the 1991 Gulf War, showed how air power could detect, attack, and destroy emerging adversary ground forces with devastating effect:

On Jan. 29, 1991, Iraq launched its only offensive of the Gulf

War—and was promptly clobbered by airpower... Khafji demonstrated to all but the most ingrained sceptic the ability of deep air attacks to shape and control the battle and yield advantages for engaged ground forces. In 1991, airpower identified, attacked, and halted division-sized mechanized forces without the need for a synchronized, ground counterattack.17

Air power has also demonstrated the ability to destroy much of a nation's warmaking capacity through strategic attacks. The US Strategic Bombing Survey conducted during the latter stages of WWII by a group largely composed of impartial civilian businessmen, lawyers, and bankers18 compiled 212 volumes of information and analysis regarding the actual effectiveness of strategic air power in both the European and Pacific theatres. This survey argued that, particularly in the last year of the war, "strategic bombing had a catastrophic effect on the German economy and transportation system, and this in turn had a fatal impact on German armed forces."19 Albert Speer, the German Minister for Armaments and War Production, later stated that May 1944, when the strategic bombing campaign was ramping up to full force, was the beginning of the end, and: "The war was over in the area of heavy industry and armaments "20

Coercion and counter-coercion

Diplomacy, conflict, and coercion are not one-sided affairs. Both sides influence the outcome of any interaction. This concept certainly applies to coercive diplomacy and coercive force. As one side tries to coerce their adversary, the adversary will normally try to recognise and affect the vulnerable aspects of the coercer.

As an example, to avoid nuclear war, the deterrent strategy based on mutually assured destruction or MAD quickly developed. This strategy aimed to discourage any nuclear nation from threatening the use of its



to achieve its aims by countering with the threat of full nuclear retaliation.

Mutual Assured Destruction, or mutually assured destruction (MAD), is a doctrine of military strategy and national security policy in which a full-scale use of high-yield weapons of mass destruction by two opposing sides would effectively result in the complete, utter and irrevocable annihilation of both the attacker and the defender, becoming thus a war that has no victory nor any armistice but only effective reciprocal destruction. It is based on the theory of deterrence according to which the deployment, and implicit menace of use, of strong weapons is essential to threaten the enemy in order to prevent the use by said-enemy of the same weapons against oneself.21

A coercer or dominant coercing force will also have centres of gravity that it must protect, as the adversary will most certainly try to apply coercive force against them. As an example, one of the common, critical vulnerabilities or own-force centres of gravity that are exposed to adversary coercion in almost every form of conflict is public support. As this is a "will to fight" vulnerability, the adversary will probably attempt to employ a coercive punishment strategy and escalate the cost of the conflict. The nature of these costs could be political (support for leadership), financial (sustainment costs for large military deployments or the costs of expensive equipment required for the operation), human

(casualties), or moral (excessive collateral damage and civilian casualties).

Air power can effectively negate coercive adversary attacks by demonstrating how the above costs can be minimised. In particular, air power can minimise human and moral costs by continuing to employ methods that minimise risk to non-combatants, demonstrate accuracy and proportionality in their offensive action, and maintain high levels of survivability for friendly combatants.

Key lessons learned from the application of coercive air power

Examination of the ability of air power to apply coercive force has revealed some key lessons for political leaders contemplating the use of deterrence or coercive force, and for military commanders, planners, and strategists charged with devising plans to apply coercive force.

- 1. Air power is most coercive when it is used in conjunction with other coercive elements. Coercive diplomacy, other military elements that form a coercive presence, parallel psychological operations and forces that can immediately exploit changes in adversary behaviour all enhance the coercive effect of air power.
- 2. Enemy demoralisation (the degrading of the will to fight) should be an air campaign objective.²²
- 3. Coercive strategies, including those employing air power as a coercive means, are often dependent on successfully exploiting one or more of the following three factors:²³
 - a. escalation dominance turning the heat on the enemy up or down at will;
 - denial defeating the adversary's military strategy; and

- c. magnifying third party threats reducing the ability of the adversary to defend against a third party. Air power was used successfully in this capacity at the start of Operation ENDURING FREEDOM (the Northern Alliance was the third party) and during Operation UNIFIED PROTECTOR in Libya (where the anti-government forces were the third party).
- 4. Coercion has a good chance of success if the coercer can bring about four related conditions:²⁴
 - a. adversary feels victory is impossible;
 - b. adversary feels resistance is futile (hopelessness);
 - surrender now is better than surrender later (the future will hold increased levels of pain); and
 - d. compliance brings some benefit.
- 5. Too much destruction, or destroying the wrong things (including noncombatants), can be detrimental to coercion and expose a coercing force to counter-coercion. Air power must be used proportionally and with discrimination—"For airpower to retain its credibility and hence its ability to coerce, it must be used with restraint." ²⁵

Coercive force in Libya

Following the passage of UN Security Council Resolution 1973 on March 17, 2011, authorising "all necessary measures" to protect civilians, establish a no-fly zone, and enforce an arms embargo, ²⁶ US and allied forces commenced military operations against Libya two days later. This action was called Operation ODYSSEY DAWN, and it was a US Africa Command-led combined operation



initially involving control of the air and strike missions. Offensive missions commenced with strikes by the United States Air Force (USAF) and the United States Navy (USN), French and British aircraft, and cruise missiles from American and British naval vessels.²⁷ On March 24, the US handed over control of the operation to NATO, and it became known as Operation UNIFIED PROTECTOR.

NATO and Libya – Operation UNIFIED PROTECTOR

Since March 24, an unprecedented coalition of NATO Allies and non-NATO contributors have been protecting civilians under threat of attack in Libya, enforcing an arms embargo and maintaining a no-fly zone. As NATO Secretary General Rasmussen explained, under Operation Unified Protector, NATO is doing "nothing more, nothing less" than meeting its mandates under United Nations Security Council resolutions. No NATO ground troops have participated in the operation—NATO's success to date has been achieved solely with air and sea assets.²⁸

the conclusion of Operation Αt UNIFIED PROTECTOR, NATO and coalition aircraft had flown over 26,500 sorties, including 9,700 strike sorties, and had destroyed over 5,900 military targets.²⁹ No doubt, much analysis of the effects of this operation will now take place. This analysis will most certainly include coercive effects and the role air power played in achieving them. It may be valuable to take a cursory look at the way air power was employed in this operation to see if it fits into one or more of the coercive strategies identified in this paper, and if it appreciated the above lessons learned.

In essence, this operation employed what can be viewed as a coercive denial strategy to prevent the then Libyan government from achieving its objective of quelling the rebellion of a large portion of its civilian population by using force. Air power was used to target the Libyan means being used to attack rebel forces and subdue civilian unrest, and in particular the military aircraft and heavy weapons being employed. Whether air power

actually achieved denial effects, including the changing of Gaddafi's or his force's behavior or will to fight, requires more analysis. If it

did persuade Gaddafi forces, and if air power only had tactical, destructive effects, it can still be viewed as being destructively coercive, if the elimination of Gaddafi's heavy weaponry, including much of his armor and artillery, rendered his forces incapable of defeating the rebel forces.

Interestingly, during the middle portion of this operation, when there seemed to

be little progress in the civil war either way, doubts about air power's ability to significantly influence the outcome began to surface:

We have reached the stalemate that we always seem to reach when there is a great reliance on Western airpower supporting local forces. We saw it quite often in the Balkans and other places. There's a limit to how much air strikes can do especially when the government or loyalist forces have most of the firepower on the ground. There's a situation with the geography and the military tactics being used by both sides. To break the stalemate you'd need to have some quite heavy conventional forces move into the country.³⁰

While the above comments were written in early August, by the end of that month rebel forces, backed up by air power, had captured the Libyan capital, and Gaddafi's days were numbered. By the 20th of October, Gaddafi was dead and the rebel victory was secured. While it is difficult to gauge how much air power contributed to this result and how coercive that power actually was, there is little doubt that it contributed to the demise of Gaddafi and his forces.

The lessons learned regarding the coercive use of air power that have been shown previously may be of use in interpreting how air power affected this civil war. Byman, Waxman and Larson's assertion that coercion could be deemed effective if it defeated the adversary's military strategy (denial) or magnified a thirdparty threat³¹ seems applicable in the Libyan case. With the denial aspect already discussed above, the levelling of the playing field air power offered by defeating Gaddafi's air force and heavy weapons may have made the rebel forces (the third party) a bigger threat to Gaddafi's forces than previously anticipated. Perhaps the indication that the air powerbacked rebellion was now being viewed as a serious threat came on September 1st when the press reported that one of Gaddafi's sons attempted to negotiate with the rebel leadership:

Saadi Gaddafi said on al Arabiya television he had officially been given the power to negotiate with the forces fighting the former dictator for control of Libya. The news was interpreted as being an indication that the colonel may be willing to bring an end to his war with opposition fighters. However, another son, Saif al Islam, spoke on the al Orouba television station broadcast from Syria-and vowed to continue the resistance. In a recorded message he said his father was 'fine,' and urged supporters to continue battling opposition fighters, who he described as 'rats.' War of words: mixed messages are coming from Saif and Saadi Gaddafi. Sky News foreign correspondent Lisa Holland said the comments of Saif-who, along with his father, is facing arrest on war crime charges by the International Criminal Court—sounded 'delusional.'32

Interestingly, while Saadi seemed willing to negotiate, his brother Saif, who was under indictment by the International Criminal Court (ICC), was not. This begs the question if the ICC's action helped or hindered a quick resolution of the conflict. While indictment by the ICC may have lent some legitimacy to the forces opposing Gaddafi and de-legitimised the Gaddafi regime, when viewed against Mueller's guidance³³ for conditions conducive to successful coercion, it may have hindered. Although, the first two conditions (the adversary feels victory is impossible and resistance is futile) had probably been met by early September, the humiliation of public trial at the hands of the ICC, for Muammar and Saif Gaddafi, may have negated any chance of achieving the last two conditions (surrender now is better than surrender later. and with compliance comes some benefit).

With regard to counter-coercion, it appears that NATO's employment of air power and their counter-coercion methods were successful. From the commencement of air strikes, media messages like "CF-18s abandon attack on Libyan airfield to avoid collateral damage"³⁴ were clearly proactive measures to ensure public support for the operation was retained. Additionally, as zero NATO personnel were killed in combat in Libya during the almost 10,000 strike sorties flown, the perceived human cost of this operation remained low and not susceptible to coercive pressure on public support.

Air power's contribution to coercion in Libya will be judged over time as more information becomes available. There is little doubt that air power had a significant effect on this civil war, and some of the air power effects were coercive.

'Whether one agrees with the intervention, one thing is clear, and no surprise to objective observers: modern airpower [sic] is the key force that is directly leading to the overthrow of the Gadhafi regime—just like it was the key force that led to the replacement of the Milosevic regime in 1999, and the Taliban regime in 2001,'

e-mails retired Air Force [Lieutenant General] Lt Gen David Deptula, who planned the air campaign during the 1991 Gulf War. 'Airpower eliminated the Libyan integrated air defense system, instilled a no-fly zone rendering Libyan air forces ineffective, and reduced the organized Libyan Army to dismounted infantry unable to mass to achieve sufficient effectiveness to survive.'³⁵



Royal Canadian Air Force (RCAF) air weapons systems technicians load a GBU-31 Joint Direct Attack Munitions bomb on a CF18 aircraft in Trapani, Italy on 10 October 2011.

Conclusion

Coercion is not a single or rigid strategy to be used in conflict. It is a tool that a nation or coalition of nations can use to help impose its will on an adversary nation or definable group. The spectrum of coercion contains coercive strategies that aim to achieve the goal of dominating an adversary, but in different ways, including deterrence, punishment, denial, and destruction. These ways can involve all the elements of national power in their application, but one of the key coercive elements is normally military force. Coercive force is rarely one-sided, and most adversaries are able to apply coercion to some of the critical vulnerabilities or centres of gravity, particularly those associated with the financial, human, and moral costs of conflict.

Air power, with its inherent speed, reach, penetration, versatility, flexibility, and precision, is ideally suited for most coercive strategies. While in the past, air warfare theory sometimes exaggerated the likely coercive effects of air power, analysis of a century of air warfare experience has revealed that air power has been an extremely effective coercive force, although sometimes serendipitously so. The demonstrated capability of air power, most often acting in conjunction with other coercive elements, to force behavioural change on an adversary are now well documented. As General Omar Bradley put it: "Airpower has become predominant, both as a deterrent to war, and—in the eventuality of war—as the devastating force to destroy an enemy's potential and fatally undermine his will to wage war."36 😉

Lieutenant-Colonel Brian "Mur" Murray, CD, has completed operational tours on the CH136 Kiowa and CF18 Hornet, accumulating over 4000 hours of helicopter and fighter flying time since joining the Canadian Forces in 1985. His career highlights include deploying to Italy in 1999 for Operation ALLIED FORCE, acting as officer in charge of the Fighter Weapons Instructor Course in 2000 and 2001, serving as deputy commanding officer of 410 Tactical Fighter (Operation Training) Squadron in 2002, and as 4 Wing Cold Lake Standards Officer in 2003. In 2009, after completing a tour as the Analysis and Lessons Learned Branch Head in the Canadian Forces Aerospace Warfare Centre, Lieutenant-Colonel Murray became the Canadian Forces Liaison Officer to the Royal Australian Air Force Air Power Development Centre in Canberra, Australia.

The author would like to thank Group Captain (GPCAPT) Rick Keir, Director Air Power Development Centre (APDC), and Dr. Sanu Kainikara, Deputy Director Strategy APDC for their review of and significant contributions to this paper.

Abbreviations

C2 command and control

ICC International Criminal Court

NATO North Atlantic Treaty Organisation

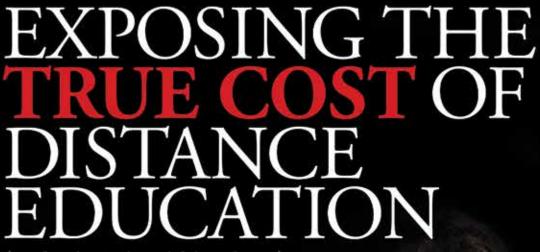
US United States
WWI First World War
WWII Second World War

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(and what should be done)

BY MAJOR BERNIE THORNE, CD, MSc

Reprint from *The Canadian Air Force Journal* Vol. 4, No. 3, Summer 2011

The following article is informed by the author's Master's thesis. This thesis sought to identify the reason why some military personnel succeed in part-time learning, while others do not. The thesis discovered that, paradoxically, the most motivated and driven people were those who tended not to complete. When a full workload, family life, personal time, and the school work compete for the attention and effort of highly driven individuals, those who do not lower their workload may burn out if the programme is longer than their endurance. Walking the path to burnout incurs significant costs to the member and also to the organization. So, this article could have been written to educate students of the dangers of burnout, and what skills/supports may be employed to help prevent it; however, discussion with the editor clarified the need to inform policy makers of the deleterious impacts of and ways to enhance part-time distance learning programmes.

INTRODUCTION

→ he demand for ever-increasing levels of education within the Canadian Forces (CF) continues to mount. From our very beginnings as a professional military, there was wide acceptance of the need for a liberally educated officer corps. With the increasing pace of technology, the CF must also depend on advanced education to access specialized skills. Ever-increasing complexity of bureaucratic control mechanisms demand solid understanding of the underpinning theories, as well as the application of those controls to work within and shape the mechanisms as required. The target audience has expanded beyond the officer corps to include the entire CF, grown in span to include the CF at large, and broadened to include a range of programmes often not available from within military training systems.

The CF has facilitated and encouraged members to undertake educational programmes. There has been a myriad of ongoing sponsorship programmes aimed at delivering advanced education: Advanced Degree Completion Plan, Educational Reserve, et cetera. There have also been initiatives to increase the formality of high-level military training to achieve, where possible, equivalency with civilian universities. Programmes that have been proven popular include the Officer Professional Military Education (OPME), which provides university

credits, and the Staff College, which when coupled with supplemental work, offers a master's degree.

There is also an increasing value placed on advanced education qualifications with certain positions, trades, and rank levels, requiring educational accreditation. Weighting of education on merit boards for promotion, postings, and access to highly sought courses is spreading at a sedate but steady pace. The civilian workforce also values academic qualifications, and the potential for access to a better second career is often another motivation, as is the desire to prove/improve oneself.

As the CF is unable to deliver the desired levels of education to all members during working hours, several programmes have been created to partially sponsor members willing to undertake education on their own time. The author completed his master's degree under the Advanced Degree Completion Programme, and a newer programme called the Educational Reserve is now in place. These programmes offer monetary sponsorship while participants continue to work and complete education on their own time. In an environment where postings and deployments often occur with little warning, many members lean towards distance learning to ensure opportunity for completion.

Risks

The desire for education is shared by both the CF as an organization and the individual members who wish to have access to it. Access to the fully sponsored (time and costs) programmes is normally strongly contested, with a large number of members vying for the opportunity. Work is laid aside for a year or two to allow concentration on education, and it is usually expected that the educational knowledge and skills obtained will be put into use on return to work. The current operational tempo, along with ongoing personnel shortages, have made it difficult to provide members the time away from their occupation necessary to "go back to school." Financial sponsorship, alone, is much easier to obtain, but advanced education obtained via distance learning—while remaining engaged in a professional work and family life—is such a costly endeavour that the risks and costs must be considered before committing.

The risk of not completing is much higher for distance learning as compared to physical classroom attendance. The author's review of the literature revealed that the most optimistic results showed an attrition rate only 10-20 per cent worse than traditional classroom education.1 Most studies have a more pessimistic outlook. Sparks and Simonson showed attrition rates of 40 to 50 per cent higher.2 Menager-Beeley identified 20 per cent attrition for regular versus 50 per cent for distance.3 The most damning study tracked a pass rate of only 44.2 per cent for distance learning.4 Taken together, these results show a non-completion rate of between 20 to 50 per cent for distance learning, which is significantly worse than that for traditional classroom study.

Unfortunately, none of the above studies considered a critical factor in this discussion: which is: what is the difference between professionals who remain working and study only in their free time versus people who do not work at all or who work limited hours while attending school? One study did consider this factor and found that 68 per cent of career workers who studied nights/weekends were at substantial risk of not completing education as compared to only 18 per cent for students who worked only to support school.⁵ Those with careers were 3.8 times more likely not to succeed than students without careers. If we merge these study results, we see a grim picture. A generic distance learning programme will see a total dropout rate of between 20 and 50 per cent, and the working professional is 3 to 4 times more likely to be one of the students who does not succeed. Canadian Forces members who continue to work and enter distance learning are at a significant risk of not completing their course of study.

The costs incurred by any member who participates in distance learning while remaining at work are significant. Sponsorship funding may have to be returned (up to \$25,000) if unsuccessful. Compulsory service is incurred in some programmes regardless of success or

failure. Canadian Forces students who were interviewed by the author were almost uniform in how they obtained time for study. First, they lost personal time (for hobbies, relaxing, fitness, and sleep) and then, their family time was taken. In several cases, this "stealing of time" was so serious and damaging that the term "cannibalizing" was used. As these programmes normally last from two to five years, there are often postings, promotions, deployments, and new family members to deal with at the same time. The resulting stress maintained for years can cause long-term effects on motivation and even health.

Most of the time that I did my school work was after they had gone to bed... working from eleven to two o'clock or eleven to three in the morning and then getting up at six or seven to go to work the next day... It weighs on me every day that I haven't finished that. It literally pains me every day.⁶

Although time was rarely taken from the job, it is not unreasonable to assume that the amount of physiological and psychological stress may have resulted in reduced performance at work (although this measurement was outside the scope of the author's study). As the members become aware of the costs that they and their families are paying, resentment towards the CF is a reasonable expectation. This level of stress maintained for years can result in burnout that has no short-term remedy, even when acknowledged, and can cause multiple detrimental effects on performance.

THE STUDY

Background

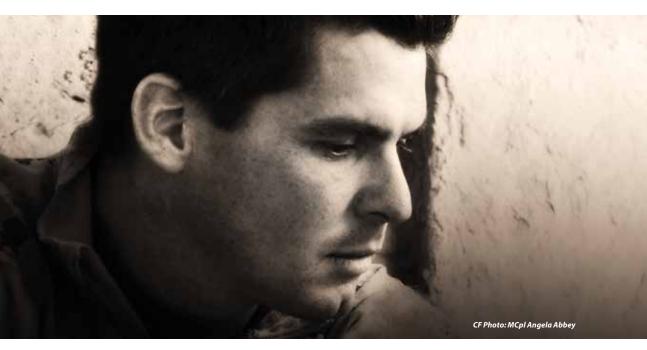
The author's study strove to identify what enables some working adults to complete significant distance educational endeavours while others are thwarted. It was identified that working adults who decide to undertake education are at great risk of not completing, so the import of this study is apparent for the individuals themselves. However, the CF and the educational institutions should have an acute interest in the question as well. In addition

to the moral concern of the organization to the individual, the CF has a vested interest in its members successfully seeking higher skills and qualifications. Many of the motivational elements (a sense of competence, as example) are also very likely to carry over to all of the activities and goals undertaken by the individual, potentially improving (or damaging) job performance. Educational institutions seek to improve their reputations and thereby gain and educate more students. Back to the question: What enables some working professional adults to complete significant distance educational endeavours where others are thwarted?

Methodology

To answer the study question, we had to find which of the theories of motivation best explained the path to success or failure to allow us to identify when, where, and how to intervene to provide the best chance of success. Given the hundreds of theories and sub-theories within each of these schools, it could seem like an impossible task to narrow down these theories or to pick one out from all the others for testing.

Fortunately, most of the theories are similar. They have largely the same elements that are explained, or interact, in slightly different ways,



There are two major schools of motivation theory. Needs (or content) theories emphasize the wants and needs that motivate people, and Maslow's hierarchy of needs is a well-known example. The other major branch is the cognitive (or process) school that tries to explain how we think, decide, act, respond, change, et cetera. In order to have a complete picture of motivation, both schools must be considered. Each of the hundreds of motivational theories holds truth, but we need to find the one that is the best "fit" if we are to explain what is happening to these students and how we can improve results.

or with stress on one area over another. A study that assesses all potential elements and discusses how these elements interact for each subject through in-depth interviews should allow the paring down to a few theories that best explain how success is achieved in this unique group.

When studying motivation, it is best to conduct purposeful sampling; that is, to randomly pick from within a desired study group. The reason for this is that those whose motivation has been most adversely affected are much less likely to volunteer. Approval from the Social Sciences Review Board was required to

conduct a study within the CF population, and privacy concerns prevented direct access to the files and individuals. The staff at the Canadian Defence Academy kindly assisted this study by sending volunteer requests to approximately 200 students. Of almost 40 personnel who volunteered, 13 were acceptable subjects. This loss of purposeful sampling could not be avoided, and it is important to note that the worst cases were unlikely to have been heard.

Results

The prediction that significant motivational elements were damaged and resulted in dropping out turned out not to be true. The needs remained outstanding (payback, qualification, recognition, etc.) by those who were unsuccessful, and the parts of their thought processes, or cognition, most important to motivation (sense of competence, control, etc.) remained strong.

The subject group felt highly efficacious and competent, and even the lack of success following educational endeavours of several years did not make this waiver. Control of the learning process certainly showed to have positive motivational benefit, but lack of control of learning was not voiced as a significant detractor of motivation in the group. Lack of ability to maintain balance between goals was cited as a larger source of lost feelings of control. The commitment to the goal of education resulting from the needs of the individuals was evoked considering both costs and benefits. The rapid and unexpected life changes thrown at these individuals contributed to the difficulty in keeping the desired balance between work, education, and family. These life changes were not, however, cited as the major source of lost balance.

More interesting is that some individuals were very strongly committed to the goal of education and seemed to have a need to perform far beyond the level required to receive the benefit. They incurred cost for no reason other than for the desire to prove themselves. Whatever the cause, a portion of the subject group was at risk of exerting such effort and accepting such stress for extended periods that the author was forced to consider "burnout" as the cause of lost persistence.

Assessing all the elements of motivation did allow a tentative identification of what caused the most at risk of burnout. Achievement goal Orientation (AO) refers to the individual's natural tendency towards what goals are selected and pursued and is a very stable trait. There are three types of AO: learning, performanceavoid, and performance-prove. Both learning and performance AOs may be held at the same time to varying degrees of strength. A learning AO drives individuals to seek opportunities to develop and grow; as could be expected, all the subjects who volunteered for education had a very strong learning AO. The performance AOs (prove/avoid) relate to the individual's motivation in terms of others. A performanceavoid AO causes the individual to avoid situations where they may compare badly or where there is risk; the subjects understandably showed absolutely neutral on the performanceavoid AO. The performance-prove AO was the one characteristic that varied.

I knew that if I applied for post-graduate studies full-time, that it was going to take me out of that stream for promotion for a bit of time. And it would probably have cost me to have my promotion to major delayed... you want to come out as high as you can so it's not wasted effort. There were "eyes on." I ended up 1st of 9,000 in the entire master's field at AMU.

A stronger performance-prove AO causes individuals to seek challenging opportunities to compare with others, to show their competence and demonstrate growth. A combination of strong learning and strong performance-prove AO is theoretically the best mix to drive performance and growth. These individuals are the ones whose traits also cause them to set for themselves challenging and risky tasks at work. In this study, however, it was revealed that this combination caused the individuals to set more challenging goals in work and in study and to refuse to back down, even when they were cannibalizing their own lives over several years.

Burnout

That people are strongly motivated and exert massive effort to achieve deeply held needs is what

leads to burnout. We want to be challenged, to have a valuable outlet for our abilities and energy. If we only did what we were told and then went home, there would be no burnout. Burnout can become a vicious cycle once started. The cynical detachment from goals and activity, and the chronic exhaustion make it very difficult to recover because the resources required to escape are disappearing without any change in the conditions that caused the burnout.⁸

As I look back on it, I just can't believe

that I got through it. I got down physically, I have to say. I got sick at one point.⁹

Burisch detailed a model of burnout with a basic unit of analysis being an action episode or AE. The AE could be considered a specific action with a purpose, a beginning, and an end. The AE is unspecified in duration, and in practice, it ranges from minutes to decades. AEs can be hierarchically nested, and most people find

themselves in several AEs at any given time. An AE begins when motives are activated by perception of a given situation and results in a commitment to an incentive or goal. The actor engages in planning, forms expectations of need, time, resources, likely benefits, and the risks of negative side effects. If the action succeeds and the incentive or goal is attained without investing more resources than planned, then the AE is considered an undisturbed AE. This is unlikely for any but the simplest incentives.¹⁰

When things do not run as smoothly as planned, the AE is disturbed. The goal can be blocked (motive thwarting), unplanned obstacles can call for unexpectedly high investments (goal impediment), the goal can be attained with the results not living up to expectations (insufficient reward), or unexpected negative results can offset some or all of the gains (unexpected negative side effects). These disturbances result in stress that Burisch refers to as first and second order. When an AE is disturbed, first-order stress appears initially, and the actor attempts to remedy the

situation. Second-order stress and then burnout can occur when repeated attempts to fix the disturbed AE do not result in success, and there are no remaining outs or buffers. This second-order stress usually results in feelings of loss of control. In some cases, where the actor's world picture was not in accord with reality, this may lead to enhanced competence once internalized. Coping can fail, however, and this can trigger burnout. Unsuccessful coping can trigger large changes in motive, with such possible results as: planning becoming excessively perfectionist,

planning becoming inadequate because of panic, planning being replaced by reaction, and aspiration levels decreasing. Feelings of self-efficacy can be lost. Some people may be burnout prone, and it is possible burnout-prone people that systematically overestimate their ability or happiness generation successful **AEs** while underestimating or overlooking the costs.11

"MY WIFE REALLY
TRIED TO BE
SUPPORTIVE,
BUT I BASICALLY
ABANDONED MY
FAMILY FOR THAT
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NEVER DO IT AGAIN."

Grasha and Savickas both defensive (frustration distinguish between or maladaptive) and coping mechanisms (constructive or adaptive) to stress.¹² They consider that defensive mechanisms always involve some amount of distortion or selfdeception and are unhealthy in the long term; examples being regression, fixation, or withdrawal. Coping mechanisms include gaining information, seeking help, problem solving, recognizing own feelings, and setting new goals. These mechanisms and strategies are trainable and therefore offer possibility of successful intervention. 13

When in a situation leading to the potential for burnout, it is critical for individuals to employ effective coping tools early on. Unfortunately, many distance learning programmes do not provide the relationships and support networks necessary to seek help. In addition, the individuals are usually far ahead (in the given academic area) of those around them. The only effective coping mechanism remaining available to an individual

standing alone is to recognize the true situation and set reduced goals (vice self-deception and fixation). A strong performance-prove AO makes the subjects less willing to ask for time off or to request a reduction in workload because they are driven to prove themselves capable of the challenge. It is deeply unfortunate that those individuals who are most likely to take on many and challenging goals are those least willing to use effective coping methods. Instead, fixation becomes the norm, and achieving the goals becomes a question of endurance.

"My wife really tried to be supportive, but I basically abandoned my family for that two years. It was terrible and I'd never do it again." ¹⁴

Those who walk this path and suffer the pathology towards burnout suffer greatly. The damage to self-respect, quality of life, and willingness/ability to give extra efforts to the CF are significant within those who are the most driven. Several of the subjects had begun or were seriously considering release. Most of the subjects had stated how they were going to shift balance back to their families and themselves; they were much less likely to accept significant new demands from work. This problem is as serious to the CF as it is to the individual. Fortunately, something can be done to reduce burnout; effective coping is a skill that has been proven to be trainable, and education policy can be adjusted to help provide the most critical supports.

As an aside, the author was deployed for six months to Kandahar and paused study for that period. The reduction in stress and pressure made it feel relatively like a vacation despite the challenges of the deployment—a good chance to "recharge the batteries." The CF cares about quality of life and protects personnel from repeated deployments without adequate "home time" in between. Advanced education, done part-time, can last two to seven years without pause, and is as bad as or worse than deployment in many ways to the individual and family. Yet there is no oversight or protection for the individual involved in education.

RECOMMENDATIONS

It is critical that policymakers understand the threat to individuals and to the CF when encouraging significant education while the members remain working. Although difficult to gauge the costs, as the individual changes gradually over several years, the changes are significant. Following the recommendations below should reduce the incidence and severity of burnout, but not prevent it in all cases. As there is risk involved, the programme must be of worth to both the individual and the organization to justify the risk.

If the programme deals explicitly with the work of the individual, not only is the value clear, but also the education is greatly improved. A tenet of adult education is the importance of applying theory as soon as possible. A workplace closely aligned with an area of study also provides a rich base of experience to make the education better and lets the student discuss learning with peers, thereby potentially improving the workplace. A support network (an important part of effective coping) is much more likely as well.

Training Before Beginning

Training the potential students prior to and during education is perhaps the most critical element in preventing burnout. Each region already conducts educational conferences and relationships with a personnel selection officer (PSO), who is required to complete individualized learning plans and to apply for the various programmes. These conferences and relationships may be leveraged to deliver required training and offer an opportunity for graduates to brief their work, for students to seek/discuss thesis ideas, et cetera. If the conference is outside the PSO realm, the students would likely be quite willing to organize on a regional basis—if they were authorized.

Most subjects in the study miscalculated the effort and time required for education and the costs they and their families would incur. Some of this was certainly from unsophisticated decision-making skills, but some was also from misinformation—it is amazing how many schools say that 10 hours a week for two years can give a real master's degree. Schools need to sell their "product." Most full-time students who have no other distractions and access to all required resources and support at their fingertips require 40 to 60 hours a week over several years. Stories from previous students and especially testimonials from recent graduates would help clarify the likely costs and encourage better decision making.

Most bases already offer learning skills such as speed reading, effective writing, et cetera. To have been away from the academic world for a number of years poses a significant initial hurdle to returning students. Not only are the old habits and skills rusted or lost, many of them have become outdated. Anyone who last did academic research looking though the card files and microfiche is in for a surprise! It is important, therefore, to encourage would-be students not only to access the means to brush up on or acquire these core skills, but also to encourage them to take a university course or two to "warm up" before jumping into the education stream with both feet.

the rapid identification of problems in policy, school, programme, or within a unit. Identification of problems is the first part of continuous improvement.

Perhaps the most important training is to encourage adoption of effective coping methods that will help solve the stresses likely to be faced and to recognize those that are unlikely to help. Effective coping methods include seeking help (time off from work, someone to spend time with kids, etc.) and goal revision (accepting lower standards in work, delaying a project or term, etc.). Using real-life examples will be important to make people who have yet to be exposed to these stresses understand the danger of ineffective behaviours such as fixation (increasing effort by taking time away from sleep or family, or planning to an obsessive degree), reaction taking over from self-regulation, and withdrawing from the activity without consciously making the decision to change goals. Measuring the levels of achievement orientation will let the students who are most likely to experience burnout understand why and be better prepared to respond effectively.



Having a community of people who are going through the same thing provides not only a social support network, but also a set of people who have faced or may face similar difficulties. The different students learn to overcome specific problems, and in turn their problems become a source of learning for the others. Having a facilitating local PSO allows for

Policy Supports

There are sections of education policy that are currently quite unfair. Residency requirements are currently not sponsored for travel or living expenses. This limits selection of programmes for those who do not wish to personally bear the associated costs. Postings can also result in students incurring unexpected

residency costs if they must return to what had been a local school. Some commanders recognize this unfairness and authorize temporary duty for work so that the student is paid to travel and live, and does not take leave or takes some leave in combination with paid travel. A fair level of support for sponsorship in residency should be set and enforced equally across all personnel.

It is also up to the commander's discretion whether or not to give educational leave in a given year. Twenty days per year is the maximum authorized, but some commanders give even more time, such as a day a week to study through the year. Distance learning Staff College is one common example of some commanders providing significant time off, while others provide none at all. Those who are in the busiest jobs and need support the most are least likely to get time off. Even when agreements are made with commanders, postings ruin many agreements. A fair level of support must be identified as a hard entitlement for both educational leave and residency sponsorship. As with maternal leave, it need not all be taken, but should not be denied. Moreover, educational leave may have to be encouraged, as those individuals who have the strongest desire to prove themselves and are most likely to burn out are the ones least likely to ask for time off.

Another area of policy that is unfair is that different programmes have different rank requisites. The Advanced Degree Completion Plan, for example, was only for officers. If we truly wish to be a learning organization, to be replete with life-long learners, we must consider or reconsider a few things. Adults seek the education they need to grow and perform. Blocking access to desired training is a significant de-motivator in a knowledge-based workforce. The specialized skills delivered in advanced programmes are increasingly needed at all levels. Finally, as the external job market tightens in the coming years, the CF will be well served by learning to better develop and to advance in-house our best and brightest.

The restricted release and payback rules can be quite unbalanced in some sponsored programmes. That there is one month restricted

release for every \$2,000 is quite normal; however, the restricted release for some programmes does not begin until graduation. For part-time learning, that can be two to seven years after having begun. The CF gained the advantage of the newly acquired skills throughout while the individuals largely gave up their own time and family time for study. This was recognized, and some programmes, such as the Educational Reserve Programme, have no restricted release provision. This is a good step; however, the various programmes must be fair across the board. I talked with some people who had not finished their education and were pretty certain they would never finish even after years of study and work. At this point, they were considering cancelling their school, just so they could complete their mandatory service and retire. To lose all that work and the qualification when coming up to retirement is a shame.

Military life includes postings to new jobs (some much more challenging than others), promotions to new levels of responsibility, deployment to war and peacekeeping missions, surge periods at work, et cetera. These life changes can cause disruption in educational endeavours. Most distance learning programmes are willing to accept a certain amount of leeway in completion time. What poses greater difficulty is the loss in momentum for the individual. If the person is burning out, to be pulled from the educational goal for military reasons can easily lead to subconscious withdrawal from the education plan without consciously admitting it and/or cancelling the programme. The added stress of payback of sponsorship funds, restricted release rules, being seen as a failure, et cetera, all make it very easy to ignore the problem. However, that is not an effective method in dealing with stress. That "ball of worry" will remain, taking a piece of that person away from family, the CF, and themselves. The CF should be willing to accept delays and cancellations on programme completion. Payback of sponsorship funds and restricted release periods should be abolished for part-time learning programmes. Also, the administrator for the sponsorship programme should actively track programme delays. Allowing a member to sit inactive in a

programme for a year or more is not helping the member. Intervention is required either to break the inertia or to recommend revision of goals—normally to drop education.

CONCLUSION

Military members who undertake significant distance education while remaining at work are at great risk of damage to self and family. The CF risks the burnout of those who are some of the most driven, and who epitomize the values that we espouse. At a time when formal qualifications grow in demand by the organization and by the individual, we will likely continue to encourage our members to take education. A chosen few will be fully sponsored to receive training on military time, while the rest will do so on their family's time.

The best education helps individuals grow along their career path, and increases options for good employment within the CF and on departure. Good education also offers better performance from the individual in their current and future jobs, provides a stronger cadre for senior positions, and shows the larger Canadian population that the CF is a good place to learn

and grow. Our challenge is to deliver the best education in the best way. A blend of learning and policy supports can lift some of the worst barbs from the road to life-long learning. The key points for improvement include helping students improve their decision-making and coping skills through conferences and training at the Base/Wing level, and to level programmes to ensure fairness, especially as regards time for study to those who need it most. Discretion of the commander is likely the worst way to implement educational leave.

Part-time education will remain a challenging endeavour that will pose great risk to quality of life. When the costs are being paid by their families, knowing that members are being treated fairly as compared to other part-time learners in the CF is also very important. The members will be hard put to find appropriate balance between their goals and responsibilities, but hopefully, they will soon be better armed to face those challenges. When found, the balance will enable and encourage life-long growth.

Anyone with questions or wishing to read the thesis may contact the author at bernie_thorne@yahoo.com. •

Major Bernie Thorne joined the Canadian Forces in 1987 from Newfoundland/Labrador. Graduating from the Royal Military College, Saint Jean, Quebec, with a BSc in 1992, he carried on to air navigator training in Winnipeg. Posted to Greenwood to fly on the CP140 Aurora, he flew all navigator (now air combat systems officer [ACSO]) seats, finishing as Tactical Navigator and Crew Commander. Flying operationally for six years at 405 Squadron (Sqn), training five years at 404 Sqn, and operational test & evaluation (OT&E) for four years at Maritime Proving and Evaluation Unit (MPEU), he has flown in support of many other government departments, including over several major disasters. While on tour at Kandahar Airfield, he received his current posting to lead the Air Force Experimentation Centre (AFEC), a section of CFAWC, where the team works to identify, assess, and push the potential of new technologies to improve the effectiveness and/or efficiency of the Air Force mission. He recently completed his MSc from Leicester, United Kingdom, through the Advanced Degree Completion Plan.

List of Abbreviations

AE	action episode	CF	Canadian Forces
AO	Achievement goal Orientation	sqn	squadron

Notes

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BY DR. RICHARD GOETTE

Reprint from The Royal Canadian Air Force Journal Vol. 1, No. 1, Winter 2012

THE POSITIVE EFFECT OF NON-KINETIC AIR POWER IS A PROUD CHARACTERISTIC OF THE RCAF THAT PERSISTED BEYOND THE END OF THE COLD WAR AND CONTINUES TODAY...



INTRODUCTION

hat is meant by the words "psychological effect of air power?" Oftentimes, thoughts of massed bomber streams and bombed cities on fire come to mind. In terms of written work on the subject, academics and popular aviation writers alike usually point to "kinetic" air power roles such as the strategic bombing theories of Douhet, Trenchard, and Mitchell, the efforts by the Allied Combined Bomber Offensive to attack the morale of the German and Japanese people during the Second World War (WWII), and strategic deterrence theory of nuclear weapons during the cold war. To this grouping we can add efforts to bomb the North Vietnamese "back to the stone age" during the Vietnam War, and also the more recent theories of offensive

air power articulated by those such as John Warden and David Deptula. The focus of the psychological effect of this kind of kinetic air power is quite literally on its "impact." This is the use of offensive air forces for the purpose of destroying material, property, services—and sometimes lives—to influence an enemy populace and/or leadership to surrender. In other words, the psychological impact of kinetic air power is to target an enemy's morale to demoralize or to convince that resistance is futile, leading to capitulation.

However, what is often overlooked—or at least under-studied—in the literature is that air power can also have a **positive** psychological effect on people. This includes the reassuring feelings of hope, relief, and safety experienced by allied personnel from the

sound of a friendly aircraft during a difficult tactical situation. Most of us are familiar with Hollywood portrayals of soldiers cheering when they get their badly-needed air support, such as P-51 fighter-bombers flying over the beleaguered soldiers in Saving Private Ryan (1994), or the sense of relief felt by American GIs on the ground in Vietnam hearing the sound of helicopters coming to evacuate them from an untenable situation, such as in the 1986 film Platoon. Though these are "glorified" fictional accounts, they are based on real-life experiences of combatants who have experienced the positive psychological impact of air power. Indeed, there are other examples that we can examine.

For instance, looking at scholarship on the Battle of the Atlantic during WWII, we see that air power in the form of long-range maritime patrol aircraft played a huge role in the protection of convoys bringing supplies overseas and defeating the attack on them by German U-boats. During the dark days of late 1942 and early 1943, when shipping losses were at their highest, there was a real morale problem amongst merchant marine sailors plying the North Atlantic Run. A sense of helplessness was apparent amongst these men as they did not know if the next minute would be their last thanks to a German torpedo. However, there were also a number of sailor accounts—both merchant and navy—of the huge relief that they felt when they saw a maritime patrol aircraft flying above their convoy. The ironic thing is that the aircraft were most effective in a tactical role by patrolling just out of sight of the convoy at dusk, as this is where the U-boat "wolf packs" would gather for their night attacks. Yet just the appearance of a Very-Long-Range (VLR) Liberator or a long-range Consolidated Canso aircraft over the convoy put the sailors at ease, as they knew that they were not alone and that they would get the help they needed.²

Nonetheless, we need not limit the positive psychological effect of air power to strictly combat situations. Indeed, there are many non-kinetic roles that air forces play which have an equally, if not greater, positive impact. This includes more "gentler" forms of air power such as search-and-rescue (SAR), air demonstration, and the delivery of supplies and emergency aid by airlift. Indeed, there are many instances in the history of the Royal Canadian Air Force (RCAF) where those in need of help have discovered the simple reassurances of hope, relief, and/or rescue from the drone of an approaching aircraft's engines.

During the cold war, for instance, the RCAF's Air Transport Command (ATC) had a significant psychological impact on people, and nowhere was this more apparent than in Canada's northern region. The ATC roles included SAR missions to assist those in downed aircraft or in medical need, and air transport missions such as delivering emergency aid, and bringing supplies, relief, and joy to numerous individuals, military personnel, government workers, and a variety of communities in the North (including indigenous peoples) who were in need of assistance.

Though listed as a secondary role, oftentimes RCAF aircraft operating in the North found themselves tasked to fly to a remote area in order to help someone in medical need. This was, of course, the mercy flight, which was to be "undertaken when the job is a life-or-death matter, and can be handled by no other normal means, including commercial flying organizations."3 Whether these missions included evacuating a sick person and bringing them to a hospital, or delivering medicine (sometimes by airdrop) or medical personnel, a common theme was that the mercy flights provided relief and therefore had a positive psychological impact on those in need. Moreover, sometimes such missions paid important dividends for the Air Force. A good example is a 14 February 1951 letter from a Department of National Health and Welfare doctor sent to the Chief of the Air Staff that was reproduced in the RCAF's service magazine, *The Roundel*: "A Tribute to S.A.R.," The Roundel 3, no. 5 (April 1951): 47.

Chief of the Air Staff, Department of National Defence, Ottawa, Ont.

14 Feb. 1951

Done Sie

I would like to express my gratitude to the crew of the R.C.A.F. "North Star" aircraft and to the personnel of your Search and Rescue Unit for the mission accomplished on December 28th, 1950.

A young Eskimo child named Matto, from Lake Harbour, was reported dangerously ill in the nursing station and oxygen was badly needed if the child was to live. Our Doctor Corbett at Chesterfield Inlet relayed this information to us and we in turn got in touch with your Search and Rescue Unit in Ottawa, where Wing Cdr. Pearce and Sqn. Ldr. Miller gave us their usual very effective co-operation.

The next morning an aircraft flew over the settlement and dropped the oxygen and some drugs. By this time the child was close to death, having periods of no breathing up to three minutes. As soon as the oxygen was administered, his breathing improved; and in two days the child had recovered enough to be considered out of danger.

The local R.C.M.P. Constable in his report points out that, had the oxygen not arrived, the Eskimo boy would have died. He goes on to say that the Eskimo and other members of the settlement were grateful to the R.C.A.F. as being the chief factor in saving the boy's life.

Mr. S. T. Wood, the Commissioner of the Royal Canadian Mounted Police, who has read this report, has also expressed his sincere appreciation of the prompt response of your personnel to accomplish this mercy flight.

Will you please convey to all the personnel responsible for this flight our deepest gratitude and sincere thanks.

Yours very truly.

Moore

P. E. Moore, M.D., D.P.H.,
Director, Indian Health Services,
Department of National Health and Welfare.

Nor were the positive psychological effects of the RCAF's non-kinetic air power roles limited to SAR mercy flights: air transport missions also proved to raise morale considerably.

Every spring, the ATC conducted a series of resupply missions to replenish outposts of other government departments before the ice landing strips melted. Besides the basics such as food, medicine, fuel, and building materials, aircraft cargo also included recreational supplies to help personnel pass long periods of time at these isolated bases. No matter what they were delivering, the ATC resupply missions were a vital lifeline for those working at Arctic bases, with one author noting that the arrival of the aircraft "at these tiny outposts is heralded as the big event of the season."⁴

One of the most notable air transport roles that the cold war RCAF undertook was Operation SANTA CLAUS every December. In this annual operation, the regular deliveries of mail, parcels, spare parts, fuel, clothing, and fresh fruit were made by RCAF ATC, usually by air drop, to RCAF personnel, other government personnel at the Arctic weather stations, and even Inuit communities. However, also included was a little "something extra," whether it was a Christmas tree and decorations, a new teapot, or maybe some "liquid spirits" to keep one warm and cheerful.⁵ Flying conditions, to say the least, were not the greatest-hence the air drops—so those who received the special deliveries were always grateful for the courage, versatility, and determination of the ATC aircrew who undertook them. As one station commanding officer noted, "You've given our morale a hundred-percent lift...." An American working at a weather station echoed this sentiment, explaining, "You'd be excited too if you knew a bundle was coming down with all your mail for the past six months and perhaps a drop of something special."6 However, it was one recipient who, calling the departing C-119 Flying Boxcar on the radio, perhaps put it best: "God bless you for coming. God bless you—and a Merry Christmas." Moreover, it was not just those on the receiving end of the supplies who experienced the positive psychological effects of RCAF airlift air power missions. Indeed, it was also the ATC aircrew themselves whose morale was heightened by Operation SANTA CLAUS. As one RCAF public affairs officer captured it, "There is an incomparable thrill about dropping Christmas mail and parcels, watching the bundles parachute to the burning oil barrels below [to indicate where to drop the cargo], and knowing that you are bringing traditional Christmas cheer to lonely people."8

A remarkable and more recent example of the positive effect of Canadian non-kinetic air power is one experienced by retired Lieutenant-General (now Senator) Roméo Dallaire during his famous United Nations

(UN) peacekeeping mission in Rwanda. Speaking to the audience at a recent Canadian Forces Aerospace Warfare Centre (CFAWC)-sponsored workshop on air power support to the UN, he recalled the uplifting feeling that "the sound of the engines" from Canadian Forces (CF) C130 Hercules aircraft brought to him and his staff in the midst of their difficult mission. "We didn't care what was in the Hercs," Senator Dallaire noted, but just felt relieved knowing that they had not been forgotten, and that if they had wounded, the aircraft could get them out and get food and supplies in.9

The positive effect of non-kinetic air power is a proud characteristic of the RCAF that persisted beyond the end of the cold war and continues today, whether it is delivering supplies to beleaguered flood victims in Manitoba and Quebec, the continuous Arctic resupply of Canada's outposts, providing emergency aid to earthquake victims in Haiti during Operation HESTIA, or even simply the awe displayed on the faces of civilians watching the Snowbirds perform aerobatic demonstrations during air shows throughout the country. Like traditional kinetic air power, non-kinetic air power is also awesome, and it can prove to be very uplifting for recipients and practitioners alike for the positive psychological effects that it can have.

But the question still remains: is nonkinetic air power "real" air power or should we limit our thought on the subject to purely kinetic aspects? Essentially, this depends on one's definition of air power. While some may advocate in a more focused definition that stresses purely kinetic applications of aviation, others favour one that is more inclusive and stipulates that air power can in fact be widened to consist of "the full potential of a nation's air capability, in peace as well as war, in civilian as well as military pursuits."10 Billy Mitchell, one classical air power theorist—and, incidentally, cousin of a former head of the RCAF11—also championed this wide-ranging perspective of air power. In one of the earliest definitions

of the term, he did not distinguish between military and civilian applications of the aeroplane, calling air power "the ability to do something in or through the air, and as the air covers the whole world, aircraft are able to go anywhere on the planet." This "ability to do anything" emphasis, as American air power academic Clayton Chun notes, "brings to mind a strength or power to influence events." The use of offensive or kinetic means such as bombing is a common means to utilize air power to influence someone, but as we have seen, so are non-kinetic roles.

It says here that kinetic air power capabilities have and must still form the principal raison d'être for air forces, as it is the air force's prerogative to carry out a nation's use of military force from the air if deemed necessary by the government. Nonetheless, non-kinetic air power roles also form part of an air force's responsibilities, and in fact form the majority of air force missions, especially in peacetime. Therefore, the positive psychological impact of non-kinetic air power should not be discounted but instead deserves greater study. What do you think?

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ABBREVIATIONS

ATC Air Transport Command RCAF Royal Canadian Air Force

SAR search and rescue
UN United Nations
WWII Second World War

NOTES

- 1. See Marc Milner, "The Battle of the Atlantic," in *Decisive Campaigns of the Second World War*, ed. John Gooch (London: Frank Cass Publishing, 1990), 47–66 (especially 57–61) and also his *North Atlantic Run: The Royal Canadian Navy and the Battle for the Convoys* (St. Catharines: Vanwell, 2006).
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 - 4. "Arctic Airlift," The Roundel 19, no. 3 (April 1958): 20.
- 5. J. D. Harvey, Director of Public Relations, "Operation Santa Claus," *The Roundel* 6, no. 2 (February 1954): 44–46; J. D. Harvey, "Operation Santa Claus," *The Roundel* 7, no. 2 (February 1955): 16–20. Quote from former, page 44.
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- 9. Lieutenant-General (Ret) the Honourable Senator Roméo Dallaire, "Air Power Support to the UN Mission in Rwanda," Keynote Address at the 17th Air Force Historical Workshop, "On Wings of Peace: Air Power in United Nations Operations," 15–17 June 2011, CFAWC, 8 Wing Trenton, Ontario.
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THE **ROLE** OF THE

Reprint from *The Canadian Air Force Journal* Vol. 3, No. 1, Winter 2010

VARRANT OFFICER

BY CHIEF WARRANT OFFICER KEVIN WEST

WITHIN OPERATIONAL ART

ONE LEVEL OF
ROMAN
PRINCIPALES WAS
THE AQUILIFER,
WHICH WAS AN
EXTREMELY
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ADVISER TO
THE GENERAL

apid changes in technology and its employment have brought into question the roles of military personnel. These complexities have created a grey area around the traditional lines separating the role of the officer and non-commissioned member (NCM) within the Canadian Forces (CF). This is especially true at the senior leadership levels where the role of CF leaders has had to transform to meet the needs of the institution now operating in a new technology-dominated battlespace. Of all the senior leadership ranks of the CF, the chief warrant officer (CWO) / chief petty officer 1st class (CPO 1) has evolved the most.

This article will examine the evolution of the role of the NCM, focusing on the CWO / CPO 1. It will provide historical background, review the present day functions and responsibilities, and discuss what may be expected of the chiefs of the future. It will also explore the present-day strategies in the professional development of CWOs for these future roles. Supported by information provided by serving and retired senior officers and CWOs, this article will seek to determine if the chief has a role within the specifics of the operational art.

The role of what the CF calls the chief dates back for many centuries. Douglas Bland, associate professor and chair of Defence Management Studies at Queen's University, explains the division of labour within a military and the function of each division as follows:

Labour in armies over the centuries has been divided between common soldiers, under-officers, and officers.... Soldiers in masses provide the fighting edge, under-officers provide the stern discipline that holds the line, and officers formulate plans and position troops for combat.¹

The Roman *principales*² as described by David Breeze, an honorary professor at the universities of Durham, Edinburgh and Newcastle, and chairman of the International Congress of Roman Frontier Studies, would be equivalent to the modern day non-commissioned officer (NCO).³ One level of *principales* was the *aquilifer*, which was an extremely prestigious

post, acting as an adviser to the general.4 In the 16th century the British Army first instituted the rank of sergeant major, whose responsibilities were to supervise the activities of the sergeants. The sergeant major was considered an officer, not an NCO.5 Through modern times, the role of the senior leaders within the non-commissioned corps has been to train, discipline the lower ranks and at times assist in the development of the junior officers. There are very few definitions of the role of the CWO found within the Canadian military even today. The Guide: A Manual for the Canadian Militia published in 1880 by then Colonel (later Major-General) Otter states the requisites of a good NCO were "sobriety, activity and zeal."6 Dr. Ronald Haycock, Dean of Arts at the Royal Military College of Canada, wrote that Otter also felt that "the NCO was the upholder of discipline, sound management and communications as well as tradition and ethos.... Otter also believed in a competent, morally sound, literate, wise and knowledgeable NCO who could make decisions responsibly, write orders clearly and do administration well."7

OF ALL THE SENIOR LEADERSHIP
RANKS OF THE CF, THE CHIEF
WARRANT OFFICER (CWO) /
CHIEF PETTY OFFICER 1ST CLASS
(CPO 1) HAS EVOLVED THE MOST.

The definition by Otter closely represents the chief of today. What the Canadian military must consider is if this is the desired role. Much has changed within the world that has affected the CF and the roles of its members. The lightning speed at which technology has evolved has had a great impact on the jobs performed by military members. The changes in society that occur over time also cannot be ignored. An example of not representing the values of society occurred in 1993 in Somalia. The incident involved the brutal beating of a Somali who had infiltrated the Canadian camp; the

captors eventually beat their prisoner to death.⁸ Following this incident an inquiry was conducted to determine what had gone wrong within the CF for such a deplorable event to occur.⁹ A number of issues were raised regarding the ethics and values of the CF. It was recognized that the forces needed to meet the needs of society in order to maintain legitimacy. In 2003, the official Canadian professional military doctrine was published. *Duty with Honour: The Profession of Arms in Canada* identifies what is expected of members within the profession and what the Canadian public expects of its forces:

Incorporated in the military ethos, Canadian values mandate members of the Canadian profession of arms to perform their tasks with humanity.... Performing with humanity contributes to the honour earned by Canadian Forces members and helps make Canadians at home proud and supportive of their armed forces.¹⁰

These values and expectations state how the military must behave; it must now ensure these values are understood and instilled in its troops through education and knowledge.

The differences between the officer corps and NCM corps have changed little over the years with respect to authority. "Through their commission, officers are given particular authority and responsibility for decisions on the use of force. These decisions, from the tactical through to the strategic level, set the context within which the NCMs carry out operations."11 This identifies the officer as the commander and the NCM as the executer of tasks. The main difference when discussing both corps at the senior leadership level is experience. When NCMs reach the rank of chief they have accumulated a great deal of experience with vast expertise, whereas captains or majors will normally have spent less time in operations due to less time served in the forces. The experience the chief brings to the battlespace is invaluable. This is supported in *Duty with Honour:*

Overseeing the regulatory functions that operate throughout the profession is a major responsibility of the Officer Corps...

Only by drawing extensively on the particular expertise of the NCM Corps can officers lead the force effectively and efficiently.¹²

The CF is at a crossroads regarding the role of the CWO. In 2003, after the recommendations from the Somalia inquiry, the CF published The Canadian Forces Non-Commissioned Member of the 21st Century. 13 This document states eight strategic objectives and six key initiatives needed for the military to prepare its NCMs for the future.¹⁴ For the military to meet the future developmental needs of its chiefs, strategic objective number three (a knowledgeable NCM corps) and strategic objective number five (integral members of a strong officer / NCM team) are critical to success in the future. 15 The document states that for NCMs to evolve and meet the challenges of the future, certain activities must occur. 16

The intent of this article is to identify if there is a role for the CWO within operational art. To understand operational art, war must be understood. Carl von Clausewitz, soldier and author of On War, who is considered the author of military strategy by many of the world's armed forces, states "War is merely the continuation of policy by other means."17 The CF elaborated on this dictum by stating that "the military response to conflict must be consistent with national policy objectives. The translation of policy goals into military action must be done in a manner which ensures clarity and preserves unity of effort."18 Therefore, there is a need for those involved in war to understand the reasoning behind it if a military is to achieve its objectives.

The actual conduct of battle in war is relatively simple, it has but one aim, render the opponent powerless to resist. Howard and Paret define war as follows: "War is thus an act of force to compel our enemy to do our will." The total concept of war is much more complex, as it encompasses not just the battles but also the strategic objective desired. For these reasons war, or conflict, the term used in Canadian doctrine, is broken down into the three levels: strategic, operational and tactical. These levels spell out the links and differences from the overall objective to the actions taken to attain the objective.

As this article focuses on Canadian philosophies and the operational art, their definition of levels of conflict²¹ focusing on operational and tactical will be used:

The *operational level* of conflict is the level at which campaigns and major operations are planned, conducted and sustained to accomplish strategic objectives.... Activities at this level link tactics and strategy by establishing operational objectives ... and provide the means by which tactical successes are exploited to achieve strategic objectives....

The operational level is not defined by the number and size of forces or the echelon of headquarters involved. In a large-scale conflict, a corps may be the lowest level of operational command....

The *tactical level* of conflict is the level at which battles and engagements are planned and executed to accomplish military objectives assigned to tactical units....²²

Canadian definitions, although quite similar to those of the United States (US), differ somewhat.²³ The Canadian versions cover not only the military aspect but also include other instruments of power and capabilities such as political, economical, scientific and technological in order to achieve its objectives. The US definition concentrates solely on military forces.

The operational art is also defined differently between the US and Canada. Canadian doctrine defines operational art as "the skill of employing military forces to attain strategic objectives in a theatre of war or theatre of operations through the design, organization and conduct of campaigns and major operations." In the book *The Operational Art: Canadian Perspectives – Context and Concepts*, a leading academic at Queen's University, Dr. Allan English, refers to operational art as:

the skill of translating this strategic direction into operational and tactical action. It is not dependant [sic] on the size of the committed forces, but is the vital link between the setting of military strategic objectives and the tactical employment of forces on the battlefield....²⁵

English states the most compelling difference between the Canadian definition and that of the US is "operational level is not defined by the size and number of forces involved, but on the outcome of an action, and that no specific level of command is solely concerned with the operational art."²⁶

CANADIAN DOCTRINE DEFINES
OPERATIONAL ART AS "THE SKILL
OF EMPLOYING MILITARY FORCES
TO ATTAIN STRATEGIC OBJECTIVES
IN A THEATRE OF WAR OR THEATRE
OF OPERATIONS THROUGH THE
DESIGN, ORGANIZATION AND
CONDUCT OF CAMPAIGNS AND
MAJOR OPERATIONS."

The CF must define what functions it wants its chiefs to undertake within this art. Presently within the CF there is the command team concept, which also lacks a clear definition. In current CF lexicon, the command team is often described as comprising the commander and the most senior NCM, usually a chief at the unit level or above. For this discussion it will be considered that the senior NCM is a CWO. The chief is considered one of the closest advisers to the commander. Chiefs will mainly lead people and then move into roles leading the institution as they progress to command level positions. Those on the officer career track spend less time leading people, as their command roles carry them more rapidly to the institutional leadership realm. As CWOs will have enormous experience in dealing with people, they will bring a different view based on this experience and leadership. The commander and the chief complement one another. Both members of this team look at issues and problems from different angles, thus enabling a more in-depth analysis creating more effective decisions.

As operational art is the link between strategic objectives and the tactical actions needed to achieve these objectives, the military must determine if they desire to have the CWO play a direct role in the planning and designing phases of this art. If the chief is considered one of the closest confidants of the commander, can they also be used as a staff officer within the planning and design team? Lieutenant-General Michel Maisonneuve (Retired), former Chief of Staff of Allied Command Transformation, believed that the chief as an adviser to the command team must understand the operational art:

If we expect the CWO to support the General or Flag Officer (GFO) in his/her responsibilities, we need to give them the basic understanding. Similarly, operational art will have an impact on the Non-Commissioned Members within a command...The adviser of the command team must have a role to play....²⁷

If the chief becomes part of planning or design team, is there still a need for them to be advisers? Or, vice versa, if the commander needs a chief as an adviser, should the chief be part of the operational planning team?

Brigadier-General David Fraser, Commandant of the Canadian Forces College and the Commander of Task Force Afghanistan in 2006, remarked that there was a role for the chief within the operation art, as they "can provide a fresh view/opinion to the affect [sic] commander who in turn can take this input and balance the views with the objective of generating results."28 Brigadier-General Fraser also noted, "Given this nascent operational level experience I do not believe we have prepared our CWOs for this world.... Suffice to say we rely on the NCMs own experience and moxy to learn what the officer knows in theory and struggles to apply in reality."29 This brings to light a concern that possibly the CF has not been preparing its chiefs for the future.

CWO Michael McDonald, Land Forces Training and Doctrine System CWO and former Task Force Afghanistan CWO in 2006 saw it this way: I do believe that the CWO has a role in operational art. Although at the strategic level you are not directly involved with the soldiers within the units (sections, platoons, companies and even battalions) your advice to the commander may have effects that will indirectly touch the troops. The command team approach allows soldiers to feel that they are being represented at all levels and not necessarily only at their unit.³⁰

McDonald believed the importance of the chief to the command team is as an adviser. Although not directly involved in the operational art planning or designing, he has input to the commander that will concern the troops throughout the force. McDonald also mentioned that the chief at the higher operational and strategic level headquarters is advising on policy that will affect all NCMs as opposed to a single unit.³¹

Colonel Howard Coombs, the Director Joint Command and Staff Program (DL) at Canadian Forces College, agreed that the CWO has a role:

The formulation of campaign plans has, in my opinion, two components—art and design. The former is intuitive; while the latter is systemic or mechanical....

The sequencing of decisive points along selected lines of operations is an intuitive act ideally accomplished by a commander in conjunction with his/her key staff. The Force Chief Warrant Officer or equivalent should be part of that team to provide input based on experience and developed intuition which has been gathered by performing the types of missions and tasks that will fall out of the conditions needed at individual or groups of decisive points.³²

Coombs displayed the same concerns regarding the education of the CWO: "The shortcoming in DP3/DP4 [Development Period] education for NCMs is that they do not receive enough education in these conceptual processes and therefore are disadvantaged when asked to provide input into the planning process."³³

The former CF CWO, Mr. Daniel Gilbert, was the only person surveyed who based his response on the definition of operational art. He made a very interesting observation that a chief would have little involvement in the operational art within the limits of the battlefield. Although if operational art is considered as the bridge between strategy and tactics, then the chief could have a large role, but it needs to be determined what that may be. He also made reference that commanders have been trained for many years to develop this area and not many are involved.34 Gilbert's line of reasoning is valid in that the CF has been preparing the officer corps for many years in the Operational Art, but very few have ever had the opportunity to practice it.

CWO Dano Dietrich, Command CWO of the Canadian Expeditionary Force Command, stated "the principal value that I bring to the Op Art [sic] field is the same that all CWOs/CPO 1s bring, regardless of their respective positions: in one word, communication.... As a communicator I must be able to answer questions and reinforce desired behaviour ... I must understand it. I would argue that strategic level studies are not a 'nice to have,' but rather a 'must' at our level." He goes on to reinforce the issue of a chief having to have this knowledge by saying that the education process needs to begin at lower rank levels.

This survey has proven that there is a belief that chiefs have a role within the operational art. One main issue of concern is the lack of training and education in the art itself. None stated that these most senior NCMs do not have the capability of being involved; to the contrary, most strongly believe that their experience and strong leadership naturally gives them a role.

What the Canadian military needs to be concerned about is the universal agreement that they are not preparing their chiefs for the roles expected in the future. The Non-Commissioned Member Professional Development Centre (NCMPDC) needs to continue to evolve its programs in order to meet needs of the Canadian military based on what the organization

wants the role of the chief to be. The NCMPDC has established within its programs an introduction into the operational art. This will provide CWOs a base, enabling them to understand the language and processes within the art. It will not, however, prepare them to assume jobs as planners or designers. If this is desired, more education in this field will be required.

Does the military still need the chief in the role of custodian of the NCM corps and guardian of its customs and traditions, or does it need them to function more in the role of a staff officer? If the CF judges the need as being for a staff officer, the next question must be, is there a need for chiefs or should they become members of the commissioned officer corps? In closing, the CF has one of the most professional and respected non-commissioned corps in the world. As positive as this is to the CF, this may also be the reason that the line between the officer and CWO is difficult to distinguish at times. To some, it may seem that drastic statements were made in this article, but without clear definitions of roles and organizational requirements for the future, a grey area will continue to exist between the two corps.

APPENDIX A

A survey was conducted of various serving and retired senior officers and CWOs who have served at the operational command level and higher. The intent of this survey was to acquire the feeling of what high-ranking members of the CF believe the role of the CWO is within the operational art. The general consensus among all of the senior officers was that the chief could play a role, although they required more exposure and knowledge within the art. One CWO believed there could be a role, although it is dependent on what Canada will accept as a definition of operational art.

The following is the question that was posed, accompanied by extracts from the responses of those surveyed:

DO YOU VIEW THE CHIEF WARRANT OFFICER HAVING A ROLE IN OPERATION ART?

LIEUTENANT-GENERAL MICHEL MAISONNEUVE (RETIRED),

FORMER CHIEF OF STAFF, ALLIED COMMAND TRANFORMATION HEADQUARTERS, NORFOLK, VIRGINIA:

As an adviser within the command team, does the CWO need to know and understand the operational art. Of course. If we expect the CWO to support the General or Flag Officer (GFO) in his/her responsibilities, we need to give them the basic understanding. Similarly, operational art will have an impact on the non-commissioned members within a command. Today we speak of "effects" on the ground, and we plan on the basis of these effects. The adviser of the command team must have a role to play in considering the effects required and how to achieve them. Plans will be developed in consultation.

BRIGADIER-GENERAL DAVID FRASER,

COMMANDANT CANADIAN FORCES
COLLEGE AND FORMER COMMANDER
OF TASK FORCE AFGHANISTAN:

Given this nascent operational level experience I do not believe we have prepared our CWOs for this world. The officers are grasping to understand and do this so you can figure that the NCMs are way behind. I will not discuss the lack of harmonization between the NCM and offr [officer] education (DPs) [development periods] programmes and the poor understanding between education and training. Suffice to say we rely on the NCM's own experience and moxy to learn what the officer knows in theory and struggles to apply in reality.

Having said this, I believe that the NCM can provide a fresh view/opinion to the affect [sic] commander who in turn can take this input and balance the views with the objective of generating results. NCMs represent a part of the organization that has different edcn [education] and trg [training] foundations and experiences. These differences can add to the understanding of the situation and provide a great breadth and depth of advice to the commander. What we need to do is provide the NCM the theoretical foundations to compliment [sic] the experiential foundation in order to serve the commander and operational concerns.

So what? We need to teach NCMs the strategic and operational theory. With this foundation the NCM will be able to connect the dots in a more effective manner serving the needs of the commander and represent the opinions and needs of soldiers.

CHIEF WARRANT OFFICER MICHAEL MCDONALD,

LAND FORCES DOCTRINE AND TRAINING SYSTEM CWO, AND FORMER TASK FORCE AFGHANISTAN CWO WITH BGEN FRASER:

I do believe that the CWO has a role in operational art. Although at the strategic level you are not directly involved with the soldiers within the units (sections, platoons, companies and even battalions) your advice to the commander may have effects that will indirectly touch the troops. The command team approach allows soldiers to feel that they are being represented at all levels and not necessarily

only at their unit. As the TFA [Task Force Afghanistan] CWO, I would accompany the commander on all his visits to the field units for a number of reasons.

First and foremost to show the soldiers that they did have an NCM representing them at the Bde/Div [brigade/division] level who they would feel more comfortable talking to. Although, as you know Generals are just people like us, most soldiers have a hard time speaking to them, but will have no issues talking to one of their own (CWO). It also shows that we are all able to share in their hardships (especially in Afgh [Afghanistan]).

The CWO of the future will have a greater role to play at these levels as opposed [to simply being] a representative of the NCMs. The CWO at the Bn/Regt [battalion/regiment] level is directly involved in the day to day running of a unit in regards to the welfare of the soldiers, etc., whereas the higher formation CWO is indirectly involved by [inputting] ideas, sitting on boards, counsels, etc., to help to change/amend policies that will affect the soldiers at a different level (national policies, etc.). The bottom line is the CWO at all levels is there for the soldiers, but he generally brings a different perspective to the table than the Sr [senior] Officers.

CWOs at all levels are basically doing the same thing (taking care of the troops) and advising commanders on courses of action that are based on common sense, experience, and with the welfare of the soldiers in mind. At the higher levels you are advising on policy changes, etc. that will affect all NCMs as opposed to a single unit, but with the same endstate [sic] in mind. I do believe there is a requirement to have these sr [senior] level CWOs, as most nations are quite jealous of the command team approach that Canada has.

CHIEF WARRANT OFFICER DANIEL GILBERT (RETIRED), FORMER CANADIAN FORCES CWO:

Based on this definition, which limits operational art to the battlefield, I would say that CWO in the combat arms may be involved. However, if the definition is broader, the implication of CWO could also be broader. Here is what I found on CF joint force command [JFC] and operational art:

"Operational art is the use of military forces to achieve strategic goals through the design, organization, integration, and conduct of strategies, [original emphasis] campaigns, major operations, and battles.

Operational art helps commanders use resources efficiently and effectively to achieve strategic objectives [original emphasis]. Without operational art, war would be a set of disconnected engagements, with relative attrition the only measure of success or failure. Operational art requires broad vision, the ability to anticipate, and effective joint and multinational cooperation [original emphasis]. Operational art is practiced not only by JFCs [joint force commanders], but also by their senior staff officers and subordinate commanders.



Joint operational art looks not only at the employment of military forces but also at the arrangement of their efforts in time, space, and purpose. Joint operational art focuses in particular on the fundamental methods and issues associated with the synchronization of air, land, sea, space, and special operations forces.

Among many considerations, operational art requires commanders to answer the following questions: What military (or related political and social) conditions must be produced in the operational area to achieve the strategic goal? (Ends); What sequence of actions is most likely to produce that condition? (Ways); How should the resources of the joint force be applied to accomplish that sequence of actions? (Means); and what is the likely cost or risk to the joint force in performing that sequence of actions?

Operational art is characterized by the following fundamental elements: Synergy, simultaneity and depth, anticipation, balance, leverage, timing and tempo, operational reach and approach, forces and functions, arranging operations, centers of gravity, direct vs. indirect approach, decisive points, culmination and, finally, termination."

(US Joint Publication 3-0, *US Joint Operations* Chapter II, para 2c and JP 3-0, Chapter III, para 5)

If this is the way we look at operational art then it could apply to more than just the battlefield. We could be, and are as CWO, more involved in operational art when it applies to achieving strategic goals that are not connected to the battlefield. A good example is the current transformation efforts, which are guided by the same principles [as] operational art.

So before you can make a compelling argument that CWO should be involved in operational art, you need to define the left and right of arc! Operational art, if limited to the battlefield, is a very limited field. Commanders have been trained for many years to develop this art (Command and Staff college, AMSC, NMSC, NATO war college, etc.) and not many are involved. However, if we look at operational art as the bridge between strategy

and tactics (not limited to the battlefield), then the CWO have a huge role to play. You need to find out if the term operational art is limited to the battlefield, and if it is, you need to make an argument that it should not be as the principles (achieve strategic goals through the design, organization, integration, and conduct of strategies) [original emphasis] should not be limited to the battlefield.

COLONEL HOWARD COOMBS.

DIRECTOR JOINT COMMAND AND STAFF PROGRAM (DISTANCE LEARNING):

Yes—certainly. The formulation of campaign plans has, in my opinion, two components: art and design. The former is intuitive, while the latter is systemic or mechanical. If you look at the attachment operational plans based on this current COMISAF [Commander International Security Assistance Force direction can be laid out mechanically using the doctrinal elements of campaign design; however, the sequencing of decisive points along selected lines of operations is an intuitive act ideally accomplished by a commander in conjunction with his/her key staff. The Force Chief Warrant Officer or equivalent should be part of that team to provide input based on experience and developed intuition which has been gathered by performing the types of missions and tasks that will fall out of the conditions needed at individual or groups of decisive points. The shortcoming in DP3/DP4 education for NCMs is that they do not receive enough education in these conceptual processes and therefore are disadvantaged when asked to provide input into the planning process.

CHIEF WARRANT OFFICER DANO DIETRICH, COMMAND CWO CANADIAN EXPEDITIONARY FORCES COMMAND:

The essence of your question is do I believe that I have a role in Op Art [sic]? Or perhaps better put, does my boss believe I have such a role? And if so, should CWOs/CPO 1s receive better formations prior to taking on such positions? The principal value that I bring

to the Op Art field is the same that all CWOs/CPO 1s bring, regardless of their respective positions: in one word, communication. Soldiers, Sailors, Airman [sic] and Airwomen today have very good knowledge of the mission and ask very relevant questions about mission focus and government intent. In a place like the Kandahar Provincial Reconstruction Team (KPRT), very junior military members work side-by-side with WoG [whole-of-government] partners. This interaction provides both sides with new knowledge about National intent and about how all partners are working towards a similar goal. As a communicator I must be able to answer questions and reinforce desired

behaviour. Therefore to disseminate and explain it, I must understand it. I would argue that "strategic" level studies are not a "nice to have" but rather a "must" at our level. In fact I think a case could be made that you want to begin the education process at the WO/PO 1 [warrant officer / petty officer 1st class] level.

Although we often use the term "command team," I'm not naive enough to believe that I have a great deal to do with ultimate decisions, but if I am to act as an adviser and confidant, I must be in my Comd's [commander's] head space.

Output

Description:

Kevin West is the 8 Wing / Canadian Forces Base Trenton Chief Warrant Officer (WCWO). He has served in the Canadian Forces for 25 years in numerous positions across the country. He has a keen interest in military history and enjoys studying and teaching leadership theories, military culture and the ideologies of the profession of arms.

List of Abbreviations

CF	Canadian Forces
CPO 1	chief petty officer, 1st class
CWO	chief warrant officer
JFC	joint force command
KPRT	Kandahar Provincial Reconstruction Team
NCM	non-commissioned member
NCO	non-commissioned officer
NCMPDC	Non-Commissioned Member Professional Development Centre
US	United States

Notes

- 1. Douglas L. Bland, ed., *Backbone of the Army: Non-Commissioned Officers in the Future Army* (Kingston: McGill-Queen's University Press, 2000), ix.
 - 2. David Breeze, "Pay Grades and Ranks below the Centurionate," The Journal of Roman Studies 61 (1971): 130-35.
- 3. The term non-commissioned officer (NCO) is a term that is often misused. In the Canadian Forces the NCO is used for the ranks of corporal to sergeant in accordance with the Queen's Regulations and Orders. Many books and papers relate the NCO term to all non-commissioned personnel. Although inaccurate, many identify NCOs in this manner.

- 4. Organization of the Roman Imperial Legion, available online at http://www.unrv.com/military/legion.php (accessed April 2, 2009).
- 5. Sir Chas. Oman, A History of the Arts of War in the Sixteenth Century (Wiltshire: Anthony Rowe Ltd, 1987), 378, and Bland, 13.
- 6. Sir William Dillon Otter, *The Guide: A Manual for the Canadian Militia*, 9th ed. (Toronto: Copp, Clark Company, 1914), 20.
- 7. Ronald G. Haycock, "The Stuff of Armies: the NCO Throughout History," in *Backbone of the Army: Non-Commissioned Officers in the Future Army*, ed. Douglas L. Bland (Kingston: McGill-Queen's University Press, 2000), 19.
- 8. David J. Bercuson, "Up from the Ashes: the Re-Professionalization of the Canadian Forces after the Somalia Affair," *Canadian Military Journal*, 9, no.3, (2009): 31.
- 9. Government of Canada, *Report to the Prime Minister*, March 1997. This report published by Defence Minister Doug Young made reference to the failures in leadership that had occurred and recommendations to reform the Canadian Forces.
- 10. Government of Canada, Department of National Defence (DND), Duty with Honour: the Profession of Arms in Canada (Kingston: Canadian Defence Academy, 2003), 28–29.
 - 11. Ibid., 15.
 - 12. Ibid.
- 13. Government of Canada, DND, *The Canadian Forces Non-Commissioned Member in the 21st Century: Detailed Analysis and Strategy for Launching Implementation*, (2002). This document provides the strategic guidance for the professional development of the non-commissioned members for the next 20 years. It is the product of extensive analysis of the potential challenges of the future security environment and widespread consultation on how to meet these challenges.
 - 14. Ibid., I-28-I-29.
 - 15. Ibid., to see all strategic objectives.
- 16. The importance and weight of this document helped lead to the establishment of the NCMPDC on 1 April 2003 in St. Jean, Quebec. The NCMPDC has as its mandate the professional development in the subjects of leadership, management, decision-making processes and many other subjects that will prepare the NCMs, from the rank of warrant officer and above, for the future requirements of the CF.
- 17. Michael Howard and Peter Paret, eds., *Clausewitz: On War* (New Jersey; Princeton University Press, 1976), 87. *On War* is a compilation of writings by Carl von Clausewitz written over the period of 1816–1830. His wife published the book posthumously in 1832.
- 18. Government of Canada, DND, B-GG-005-004/AF-000, Canadian Forces Operations (Change 2, 15 August 2005), 1-4.
 - 19. Howard and Paret, 75.
- 20. Armed Forces of the United States, US Joint Publication 3-0, US Joint Operations (Change 1, 13 Feb 2008), II-1.
- 21. Canadian doctrine refers to levels of conflict vice levels of war. This term will be used hereafter throughout this essay.

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- 22. Canadian Forces Operations, 1-4 1-5.
- 23. US Joint Operations, II-1 II-3, to see the US definitions of levels of war.
- 24. Canadian Forces Operations, GL-7.
- 25. Allan English et al., eds., *The Operational Art: Canadian Perspectives, Context and Concepts* (Winnipeg: Canadian Defence Academy Press, 2005), 8-9.
 - 26. US Joint Operations, IV-2-IV-3, to see the US definition of operational art. See also The Operational Art, 9.
- 27. Appendix A, E-mail Survey of Officers and Senior Non-Commissioned Members, LGen Maisonneuve's responses. For information purposes, extracts from the survey have been reprinted in their entirety at the end of this article.
 - 28. Appendix A, BGen Fraser's responses.
 - 29. Ibid.
 - 30. Appendix A, CWO McDonald's responses.
 - 31. Ibid.
 - 32. Appendix A., Col Coomb's responses.
- 33. Ibid. DP3/DP4 describes the Developmental Periods that founded the Canadian Forces Professional Development System. In this case DP3/DP4 is the period for the ranks of warrant officer, master warrant officer and chief warrant officer.
 - 34. Appendix A. CWO Gilbert (Ret'd) responses.
 - 35. Appendix A. CWO Dietrich's responses.

A IRMINDED NESS: An Essential Element of Air Power

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

Reprint from The Royal Canadian Air Force Journal Vol. 3, No. 1, Winter 2014

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.¹

- B. H. Liddell Hart, 1944

INTRODUCTION

ir 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."2 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.3 - 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 1927.4

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 1950.5 The term airmindedness fell out of common usage after the end of the Second World War (WWII),

> 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

as many Western populations

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."6 AFDD 2, Operations and Organization further addresses airmindedness as a fundamental concept in a section entitled "The Airman's Perspective." 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." 8

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. This latter book is a collection of essays. The 21st 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. 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." 1 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. 12

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."13 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 airmen naturally think spatially and strategically, whereas the thinking of others is more confined or limited.14 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."15

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.¹⁶ In a 2007 article in the Air & Space Power Journal, 17 Major General Charles J. Dunlap (Retired), USAF, clothes his vigorous promotion of air power in a layer of airmindedness, but his tone is overly negative towards joint partners. Lieutenant Colonel Buck Elton, USAF, criticizes Dunlap's 2007 monograph, 18 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"19 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."20

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."²¹

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 airmindedness with superior strategic thinking, the notion of airmindedness 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 airmindedness 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 airmindedness 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.²²

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

In an effort to better understand airmindedness, 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 airmindedness itself. There was overall agreement that there is an identifiable, particular perspective that could be categorized as "airminded" or that reflects "airmindedness." Working definitions or descriptions of airmindedness provided by those interviewed ranged somewhat widely, although common threads could be detected. Airmindedness 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."²³
- "An understanding of air power writ large." 24
- "The unique perspective and decision process used by airmen." ²⁵
- "The effective incorporation of air power into the planning and execution of joint operations."²⁶
- "The thought process of airmen as they view problems."²⁷
- "Understanding of the influence that air power can have in the battlespace and the supporting role it plays."²⁸

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

- three-dimensional sense, across a full range of operations."⁴⁰
- "An understanding of air power's particular capabilities put together in a broader picture."

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" or "archaic." 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,"44 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."45 They offered that the USAF use of airmindedness may have contributed to an alienation of joint partners and has put them "on the defensive." 46 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."⁴⁷

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." While LGen André Deschamps (Ret'd), RCAF, definitely saw the

value of airmindedness in addressing strategiclevel challenges, he viewed it as a "spectrum of understanding, beginning at the tactical level."49 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)."50 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."51 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.52

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."53 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 higherthan-necessary losses.54 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.⁵⁵ 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.⁵⁶ A lack of airmindedness leads to planning or thinking about the use of air power "as an afterthought."⁵⁷ 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"⁵⁸

A range of airmindedness was recognized by some of the leaders interviewed, commonly acknowledging a lesser form which could be termed "air awareness." 59 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 wholeof-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)."60 The leaders contacted for this study did not see airmindedness as including particular expertise in space or cyber activities. 61 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.⁶² 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.63 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."64 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. 65

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.66 The Canadian view of airmindedness needs to reflect that airmindedness 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 airmindedness 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,"67 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. Airmindedness 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, airmindedness is not limited to particular air personnel, nor is it restricted to a certain rank or organizational level. Airmindedness 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. Airmindedness 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 airmindedness and ensures powerful air capabilities are properly applied.

Airmindedness 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 airminded decision—not the failure to understand air power. But there is a limit to airmindedness. 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 airmindedness. 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 airmindedness apart from other types of joint thinking. That said, airmindedness must be integrated with joint thinking in addition to its value in air-centric operations.

In order to better relate to airmindedness, it may be beneficial to draw a parallel between airmindedness and airmanship. Airmanship is defined "as art, skill, or ability in the practice of aerial navigation,"68 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 selfdiscipline."69 In many ways, that combination of art, skill, technique, situational awareness and understanding of capabilities and limitations also describes the relation of airmindedness to air power. In effect, airmindedness and airmanship are companion bookends supporting the delivery of air capabilities.⁷⁰ For those familiar with the notion of airmanship, the important role of airmindedness is well reflected in the following expression:

Airmindedness 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.⁷¹

- 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.⁷² He commented that the termination of Development Period 2 (DP2) within the RCAF contributed to this separation between the RCAF's air-power communities.⁷³ 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 21st 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. 74 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.⁷⁵ 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 nonairmen/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 crosscommunity 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 crossservice 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 airmindedness 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

ACC	air component commander
AFDD	Air Force Doctrine Document (USAF)
AFM	Air Force Manual (US)
AOC	air operations centre
AP	Air Publication (UK)
BGen	Brigadier-General (Canada)

CF Canadian Forces

Col Colonel

DP2 Development Period 2

Gen General
JOINTEX Joint Exercise

LGen Lieutenant-General (Canada)
Lt Gen Lieutenant General (USAF)
MGen Major-General (Canada)
MOD Ministry of Defence

NATO North Atlantic Treaty Organization

NORAD North American Aerospace

Defence Command

RAF Royal Air Force

RCAF Royal Canadian Air Force

Ret'd retired

UK United Kingdom
US United States

USAF United States Air Force
USMC United States Marine Corps

USN United States NavyWWII Second World War

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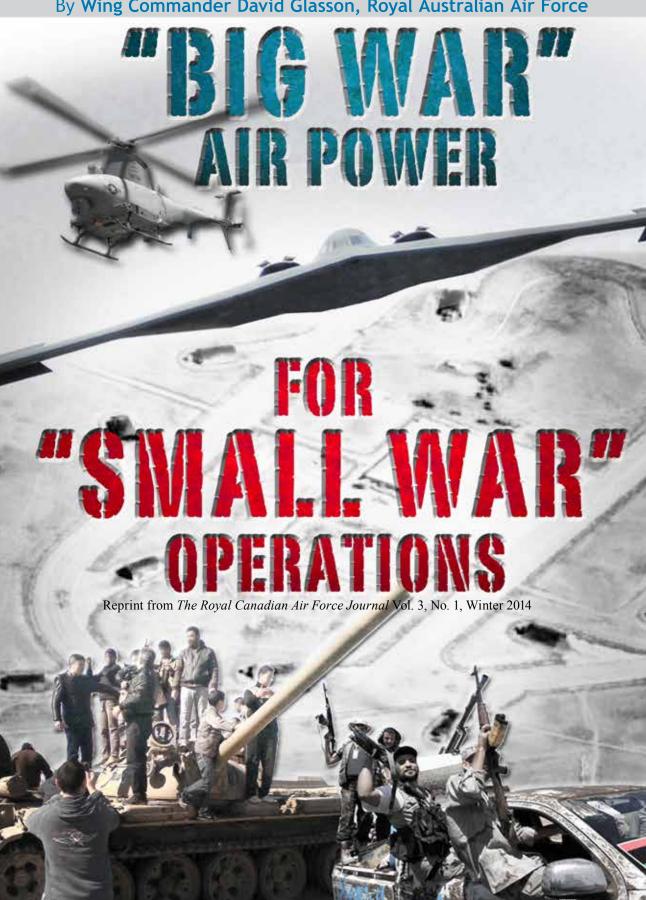
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Introduction

n 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

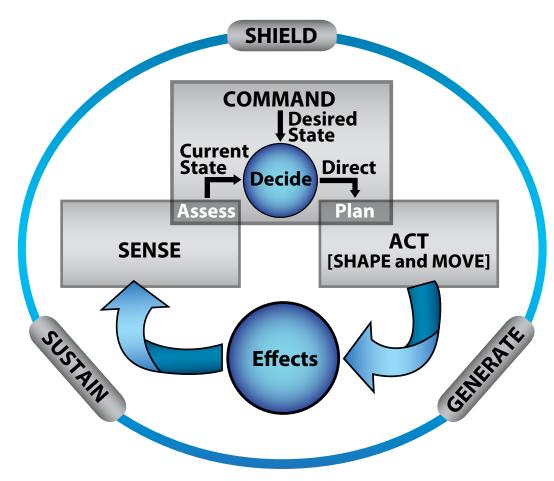


Figure 1. Royal Canadian Air Force functions⁷

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. 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.² 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.3 Conventional command practices have a foundation in the hierarchical structure of the continental staff system.4 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."5 The Act function includes the operations that involve manoeuvre, firepower and information gathering and is divided into the two subfunctions of Shape and Move.6 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.⁸ 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.⁹

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." 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. 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. 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." Air power can play a significant role in this regard and should be part of a comprehensive approach to irregular warfare. 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.¹⁵ 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.¹⁶

Air power in COIN operations

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





flexibility and reach.¹⁷ 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."18 Dubbed the Afghan model, small numbers of special forces operate integrally with air power and local troops. 19 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."20 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.²¹ Generally, irregular forces are more dispersed and do not present the same centreof-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.²²

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 predeployed ahead of planned ground operations or extends the lead time to respond to the requests of ground forces.²³ 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 manportable 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.24 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.²⁵ Air strike can "tend to aggravate an insurgency situation"²⁶ 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





a range of information, including signals, communications as well as fixed and moving target imagery.²⁷ 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.²⁸

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. ²⁹ 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. ³⁰

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 RAPTORequipped Tornado GR4s) have been deployed against irregular opponents in both Iraq and Afghanistan with positive results.³¹ 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.³² 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



not normally considered traditional ISTAR platforms have demonstrated a "significant ability to gather intelligence."³³

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." 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.³⁵ 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." 36

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



problems faced by ground transport. Intratheatre 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.³⁷ 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."38 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.39

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. ⁴⁰

Air mobility is also a joint enabling force, allowing the option for smaller ground units to conduct operations over a wider, more dispersed area. 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. This strategy of using air mobility as a force multiplier has also been used successfully by the British in Kenya, Malaya and Oman. Malaya and Oman.

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.⁴⁴ 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 stateversus-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.⁴⁵

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. 46 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.⁴⁷

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. ⁴⁸ 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.⁴⁹ 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.⁵⁰

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. 👁

Wing Commander David Glasson is an experienced Royal Australian Air Force transport pilot and qualified flying instructor. He recently graduated from the Canadian Forces College Joint Command and Staff Program and is currently serving in the active reserve in capability development at Headquarters Air Lift Group.

Abbreviations

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

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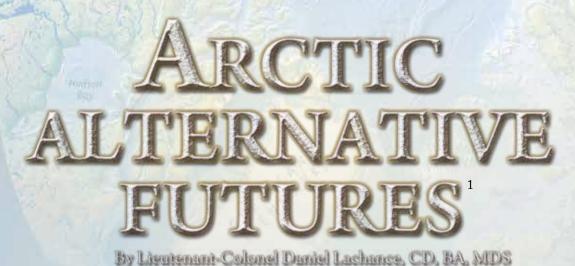
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Reprint from The Canadian Air Force Journal Vol. 4, No. 2, Spring 2011



Never let the future disturb you. You will meet it, if you have to, with the same weapons of reason which today arm you against the present.

Marcus Aurelius Antonius²

INTRODUCTION

rojecting trends³ into the future can be fraught with flaws, especially the longer the outlook. Inaccuracies in prediction often prove to be the result of forecasters' inability to accurately predict human adaptation to change, and even more frequently, the failure to envision unpredictable events (the so-called wild card4 events) and revolutionary breakthroughs. Projecting trends in a shorter outlook (10 years or less), however, is also fairly challenging because it is often hard to distinguish meaningful differences between a short-term future and the reality of today, and again, because of the possibility that unpredictable events can completely change the course of a future trend.

In the case of the Canadian Arctic, projecting trends in this dynamic environment is certainly not an easy task. One thing is certain, though, and that is if current future security trends in the Arctic continue to progress as forecasted, the next decade will be challenging to the Air Force, as we may find ourselves to be increasingly present in the Canadian high north. Military planners are currently busy setting the conditions for our future participation based on what we think the future will be, but what if the current predictions were wrong? What if the Arctic was to get far colder or warm up much faster than anticipated? Will we be ready to face these alternative futures?

This paper is intended to make the reader think about what might come to pass if the current future security trends in the Arctic are displaced by some unforeseen events. By conducting an alternative futures analysis on future Air Force Operations in the Arctic, this paper will point out the implications that a best-case and a worst-case scenario would have on the Air Force.

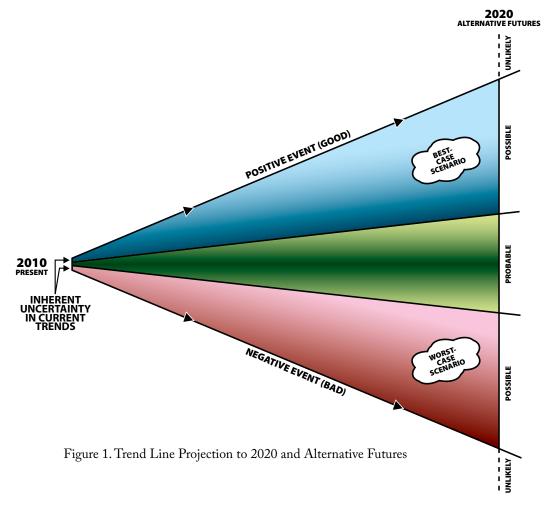
ALTERNATIVE FUTURES

Examination of the future environment is an important practice for institutions that wish to remain relevant and capable over the long term. This practice is particularly important for the Air Force, as the lead time required to acquire capabilities can be lengthy. Examining future trends and imagining futures scenarios are often employed in order to assist in the identification of future capabilities.

But what is an alternative future? If one were to plot a trend on a timeline, based on what we know, the most likely future would fall in the realm of the Probable (the green zone of Figure 1). Note that the further out one peers into the future, the greater the Probable zone gets. This has to do with the inherent uncertainties that are present in the current trends, and the fact that no matter what, predicting the future is certainly not an exact science.

Alternative futures occur when events displace the trend line outside of the probable zone. If the events all collide to produce good effects,

CF Photo: Sgt Denis Nadeau



then the trend line is moved towards a Best-case Scenario (the blue zone of Figure 1). Conversely, events that are all producing negative effects would push the trend line towards a Worst-Case Scenario (the red zone of Figure 1). For the purpose of this paper, the imagined events and their resulting scenarios had to be deemed sufficiently plausible so that the ensuing alternative futures fell within the Possible zones (the blue and red zones of Figure 1) rather than the Unlikely zone (outside the blue and red zones of Figure 1). Consequently, examining alternative futures can be useful to military planners since, theoretically, the majority of all situations that we may reasonably expect to encounter in the near future should fall somewhere within those possible extremities.

KEY FACTORS⁵

Before each scenario is presented, key factors need to be identified. Key factors are thought to be the most important contributing features of the future security trend. There might very well be other factors at play, but in order to keep this exercise manageable, the scenarios will only play with the factors considered key to Arctic futures. To create the scenarios, the key factors were made to have extremely positive or negative effects (while remaining plausible), which created a best (utopian) and a worst-case (dystopian) scenario, or if you wish, the alternative futures. Undoubtedly, how these key factors develop over the next 10 years will shape the future of Air Force operations in the Arctic.⁶

When it comes to future Air Force involvement in the Arctic, it is thought that the following three factors will affect the framework of all possible scenarios. Consequently, the key factors are:

- Climate. Not surprisingly, climate is the first key factor. The rate of climate change over the next 10 years is subject to significant debate. See the vignette about "Runaway Global Warming" to get a sense of an alternative future created by a wild card event. In any case, there is considerable scientific evidence that the Arctic climate will continue to follow a warming trend, but notwithstanding the above, it should be noted that there is also a growing body of academic opinion arguing that we are on the verge of a new cooling period. Lastly, there is also a noted correlation between the level of human activity and temperature. The greater the shift towards warmer temperatures, the more we can expect human activity to increase.
- Conversely, colder temperatures will temper human activity.
- Governance. Governing an extremely vast territory with limited fiscal resources, sparse population, and few developed assets can be an extremely daunting endeavour. With the deadlines for the United Nations Convention on the Laws of the Sea (UNCLOS)⁷ fast approaching, Nordic states are staking their Arctic claims, many of which are overlapping. Some analysts are warning of potential confrontation while others are seeing signs of increased cooperation.
- Resources. The Arctic not only possesses significant reserves of fossil fuels, it is also rich with large coal deposits and strategic minerals. Extracting these resources can be very expensive and is directly related to the market price of these commodities, the harshness of the environment, and the level and quality of governance of the region.

WILD CARD ALTERNATIVE FUTURE: RUNAWAY GLOBAL WARMING



By 2019, following years of record high temperature in the Arctic, most scientists are now predicting that within five years, the current trends in global warming will lead to massive permafrost melting. Aside from considerable infrastructure damages, as most buildings, pipelines, roads, rails, and runways in the Arctic are built on permafrost, the melting of the permafrost will lead to substantial release of methane which is stored in the permafrost. In turn, this methane will cause abrupt and severe global warming as methane is a powerful greenhouse gas which will lead to more permafrost melting and more methane release. In fact, there is enough methane stored in the Arctic permafrost that if only 10 per cent of the stored methane were to be released, it would have an effect equivalent to a factor of 10 increases in atmospheric CO₂ concentrations. Compounding the problem is the fact that methane is 20 times more effective than CO₂ at trapping heat in the atmosphere.

By 2022, global efforts to sequester carbon are proving insufficient and mean global temperatures have increased by an astonishing 3.5° Celsius since 2010. As a consequence of melting Greenland, Arctic, and Antarctic glaciers, sea levels around the globe have risen by an average of 7.5 centimetres in the last 10 years. By 2027, most of New Orleans is lost, joining suburbs of Bangkok and Dhaka which have already been submerged, while many other low-lying cities around the globe remain threatened by rising sea levels. §

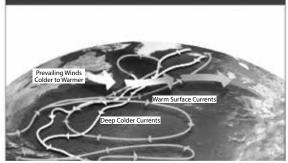
BEST-CASE SCENARIO – THE ARCTIC FROZEN HINTERLAND

General. Because it is predicted that the Canadian Forces (CF) and the Air Force are likely to continue having limited means to operate in the North, the best-case scenario (from an Air Force point of view) would be one where there are few reasons for the Air Force to increase its presence in the North. In such a scenario, the Arctic remains frozen in some sort of economic hinterland where even good governance is not enough to kick-start any sustainable economic development due principally to the harshness of the environment.

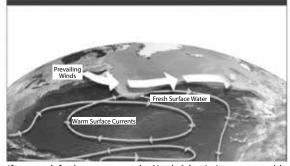
Let us now transport ourselves to the world of 2020 and imagine a future best-case scenario for Air Force operations in the Arctic by considering how the three key factors may have collided in order to produce this alternative future.

Climate. In 2020, global warming continues to be a highly debated topic. Most scientists now believe that climate changes are occurring unevenly around the globe. While the western shores of North America are warmer and drier than 20 years ago, its eastern shores are colder and much wetter. In fact, the Eastern Canada winters of 2017 and 2018 have both produced the largest snowfall seasons ever recorded. Many renowned academics are now theorizing that years of global warming have introduced a large amount of fresh water to the North Atlantic, which has disrupted the thermohaline circulation9 of the North Atlantic Drift, also known as the Ocean Conveyor (see Figure 2). In 2019, Britain recorded the coldest month of June since 1652. Consequently, many are now forecasting the return to a mini ice-age.10

And so, after several years of warming trends, Canada's Arctic mean temperature has stabilized and has actually started to cool down drastically since the record highs of 2012. The Northwest Passage never really became a practical maritime transport route due to the constant presence of icebergs and unpredictable



The Ocean Conveyor is driven by the sinking of cold, salty (and therefore denser) waters in the North Atlantic Ocean (white lines). Warm surface currents (dark lines) give up heat to the atmosphere above the North Atlantic, and prevailing winds (large arrows) carry the heat eastward to warm Europe.



If too much fresh water enters the North Atlantic, its waters could stop sinking. In such a scenario, warm Gulf Stream waters (dark lines) would no longer flow into the northern North Atlantic to release heat to the atmosphere. As a result, European and eastern North American winters would become more severe.

Figure 2. The North Atlantic Ocean-Atmosphere System¹¹

ice floes. In fact, most commercial companies have preferred the relatively safer waters of Russia's Northern Sea Route¹² (see Figure 3).

Governance. In this scenario, most surveillance of the Arctic is accomplished by space and near-space assets. Aside from routine fishery patrols and the occasional sovereignty patrols, the Air Force has little requirement to deploy in the Arctic. This is fortunate because the Air Force is facing serious budgetary constraints and had to significantly reduce the yearly flying rate (YFR) of several aircraft fleets. Although the government cancelled its plans to develop the port of Nanisivik in 2013, there are still requirements for the Air Force to support the logistical resupply of Canadian Forces

Station (CFS) Alert and the newly opened Canadian Forces Arctic Training Centre (CFATC) at Resolute Bay.

Due to the resurgence of particularly harsh winters, the Northwest Passage has been essentially impassable since 2016. Consequently, there have been very few challenges to our sovereignty, although there have been rumours of undersea patrols by United States (US), Russian, and Chinese nuclear submarines and unmanned underwater vehicles (UUVs).

But in the end, the Government of Canada has had few reasons to deploy its Air Force north. Cooperation by Arctic states has increased significantly in recent years as they realized that there was much more to gain by cooperating instead of competing when it came to filing their respective UNCLOS claims (See Figure 4).

Lastly, the region as a whole has declined as a priority for the last few federal governments and has gone back to being almost ignored by an Ottawa that has been preoccupied by more urgent matters. The Great Recession of 2008 has left the federal finances in dire straits. In this scenario, pressed to balance budgets, the government has invested little to improve the Canadian Forces and Air Force capabilities to operate in the North. To save money, the government has progressively come to rely on space assets as well as long endurance,

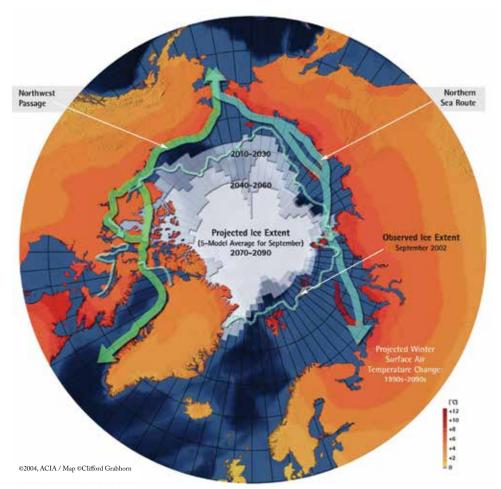


Figure 3. The Northwest Passage and the Northern Sea Route¹³

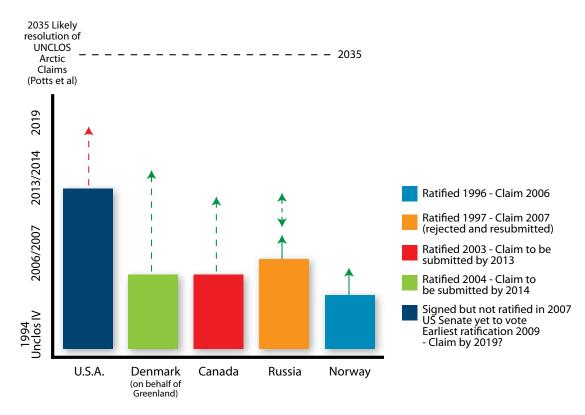


Figure 4. Arctic UNCLOS Timelines. Note that Canada is the next Nation due to submit its claim (2013). Note also that the US has yet to ratify this Agreement.¹⁴

near-space unmanned systems for surveillance of the Arctic instead of boots on the ground and new aircraft.

Resources. Although the price of commodities has steadily increased since the end of the Great Recession, the costs to extract those resources in the Arctic have continued to make them economically unviable. Aside from diamond, gold, and uranium mines (all located near Yellowknife), there has been little commercial appetite to explore and open new mines much farther away. Despite desperate attempts by provincial, territorial, and municipal governments to promote the region for business, the return of extremely harsh weather conditions has hampered any potential development. Even oil, which recently touched \$200 per barrel, is still considered too cheap to warrant the staggering costs and environmental difficulties of extracting it from the Arctic.

Summary. And so, the Arctic remains frozen in some sort of economic hinterland. The Northwest Passage does not become a practical transport route and very few challenges to Canadian sovereignty have occurred. Most Arctic intelligence, surveillance and reconnaissance (ISR) is accomplished by space and nearspace assets. And while interest in Northern commodities such as oil and gas is still prevalent, the costs to extract them from a frozen Arctic have made doing so economically unfeasible. Good governance and cooperation prevail, and accordingly, the government has few reasons to deploy the Air Force in the North. This is a good thing because in this scenario, due to budget constraints, the Air Force has limited means to operate in the high north.

But what if the key factors had arranged themselves in such a way that the Air Force was required to constantly deploy in the North? Let us now turn our attention to this worst-case scenario.

WORST-CASE SCENARIO – ARCTIC GOLD RUSH

General. The worst-case scenario from an Air Force point of view is one in which the Air Force is ill prepared to operate in the Arctic. In this alternative future, global warming is making the region more accessible, and a plethora of human activities, including tourism, mining, and criminal activities, put enormous strain on the infrastructure and to the governance of the region. Furthermore, Arctic states are not cooperating, and various overlapping claims are creating tensions in this gold rush to extract Arctic resources. Let us again imagine the world of 2020 and how the three key factors may have collided in order to produce this alternative future.

Climate. In 2020, the continuous melting of sea ice that started several decades ago is not showing any signs of reversal (see Figure 3¹⁵). In fact, in September 2019, the extent of the summer Arctic ice cap was at a near-record low, only 6 per cent greater than the record low of 2017, and 47.6 per cent below the average extent of sea ice from 1980 to 2000. As a consequence of melting Greenland and Arctic glaciers, sea levels around the globe have risen by an average of 3.5 centimetres in the last 15 years, significantly affecting weather patterns in unprecedented ways. The most active hurricane season ever recorded was in 2018, with 32 tropical cyclones formed, of which a record 19 became hurricanes (including the massive category 1 Hurricanes Erika and Michael that both devastated the Yucatan Peninsula only three months apart).

Governance. In this scenario, there is minimum (if any) cooperation amongst the Arctic nations and many territorial disputes¹⁶ are taxing the International Court. In 2016, Russia ceased to participate in Arctic Council¹⁷ affairs to protest against North Atlantic Treaty Organization (NATO) threats of retaliation after the Svalbard¹⁸ Crisis earlier that year. In fact, military analysts are now referring to the current crisis between Russia and the West as "Cold War II." North American Aerospace

Defence Command (NORAD) assets (and especially Canadian assets) are constantly being tested by Russian manned and unmanned vehicles. As well, numerous Russian submarines and nuclear powered icebreakers have been violating Canadian and American territorial waters. In 2017, a Canadian Arctic surveillance unmanned vehicle took pictures of an artificial iceberg just north of Inuvik with what appeared to be an encampment of Russian scientists. In the time it took NORAD to despatch several aircraft to investigate, the mysterious iceberg and its occupants had vanished.

Planting flags: Are these early signs of confrontation? In 2002, Denmark erected its flag on Hans Island. In 2005, Canada did the same on the disputed Island. More recently, in 2007, Russia planted its flag at the bottom of the Arctic Ocean, a move that angered many nations.

Virtually ice-free since the summer of 2016, the Northwest Passage is fast becoming a preferred shipping route between Asia and Europe. Even though the Canadian government has declared the Northwest Passage part of our territorial waters, with very little capability to enforce our sovereignty, it is not uncommon to find American, Asian, and European vessels operating within the Canadian Arctic Archipelago. The worst-case scenario from an Air Force point of view is one in which the Air Force is ill prepared to operate in the Arctic, and this became quite clear when a Polish tanker hit a small iceberg in the summer of 2016 and spilled millions



of litres of crude oil into Baffin Bay. Most of the oil spill washed out onto the western shores of Greenland, and Ottawa was severely criticized by the international press (and especially by Danish politicians) for its inability to respond to the emergency. In 2018, a German tourist died as a result of an accident near Cambridge Bay on board a small cruise ship. Again, the government was embarrassed as search and rescue (SAR) assets took well over 30 hours to respond to the emergency.¹⁹

Arctic Tourism on the rise: In November 2007 this small (Canadian owned) cruise ship (pictured below) hit a chunk of ice and sank off the coast of Antarctica. All passengers and crew were rescued by a nearby ship, but what if this had happened in our high Arctic? Would we have been able to respond in time?

The Russian mafia is also widely rumoured to be trafficking Canadian diamonds using mini-unmanned submarines and aircraft. Organized crime may also be involved in the illegal traffic of oil by tapping into pipelines onshore and offshore in the Beaufort Sea. In 2015, the American government formally called on the Canadian government to do more to stop the flow of illegal immigrants and Russian

criminals into Alaska, but again, with very limited means, there were few options available to a cash-strapped government.²⁰

Resources. Warmer climates are highly favourable to human activity, and by 2020 the Arctic is booming with activities ranging from exploration and tourism to fishing and mining. Accelerated by the impact of global warming and unprecedented high commodity prices, we are witnessing a "no-holds-barred" rush among nations for oil, fish, diamonds, and access to shipping routes.²¹ As peak oil²² occurred earlier than expected, in 2012, oil companies are now furiously engaged in active competition to secure rights to lucrative petroleum and natural gas reserves below the sea floor (see Figure 5). Unfortunately, in their rush to extract the oil, many have shown a complete disregard for Canadian laws and environmental concerns. Due to its limited capabilities, Canada has been unable to enforce meaningful sanctions. Many fish stocks are also showing grave signs of stress due to overfishing and resource mismanagement. By 2016, stocks of arctic char have been depleted so much that it is doubtful that the species will be able to support commercial fishing activities again.



In this scenario, UNCLOS has reached an impasse as almost every single Arctic nation filed overlapping and conflicting claims. Note that claims in the Arctic already overlap and many countries have yet to establish their official position on claimed areas (see Figure 6). Furthermore, Canada, Denmark, and Russia have all used the outer edge of ice formations in drawing their Arctic baselines. As ice recedes, revealing new coastal geography, questions over the

legitimacy of existing baselines will add further complexity to claims over seaward jurisdiction.²⁵

By 2020, most nations have filed appeals with the International Court and it will be many years before any rulings are expected. Meanwhile, the Russian Navy and the US Navy have deployed large naval task forces in the contested zone in the Beaufort Sea near the

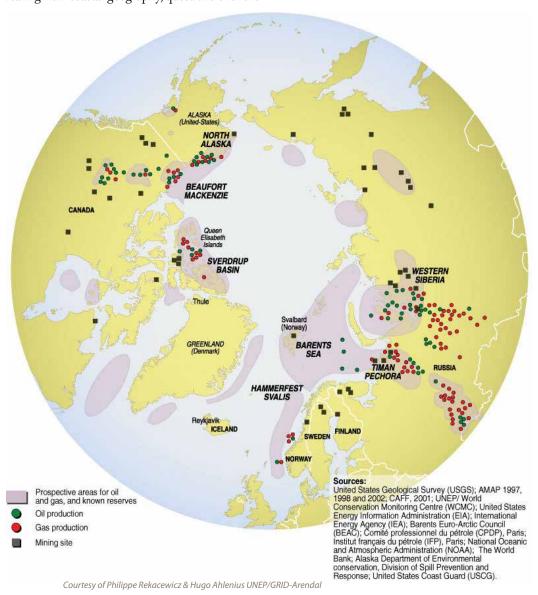


Figure 5. Main Areas of Hydrocarbon Reserves in the Arctic²³

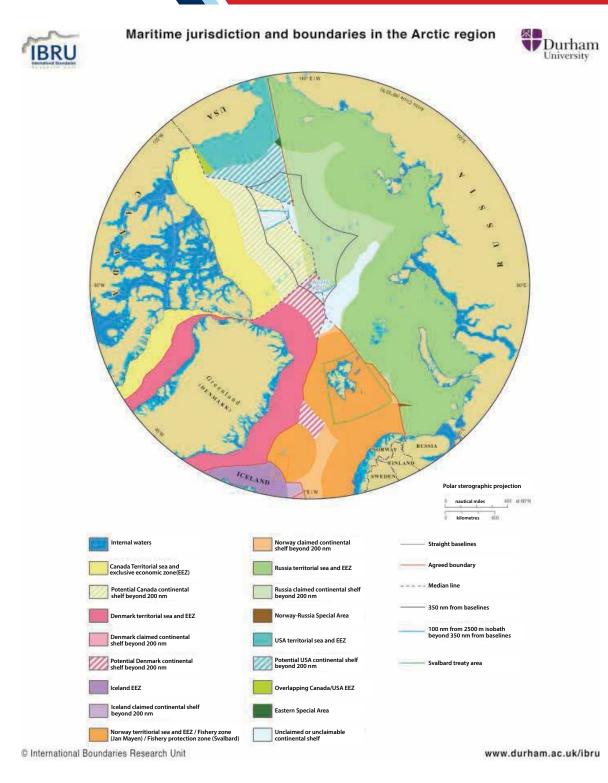


Figure 6. Claims of Ownership Map²⁴

Lomonosov Ridge²⁶ even though the contested zone straddles mostly Canadian waters.

Summary. In the worst-case scenario, the Air Force is ill prepared for northern operations while the Arctic becomes an area of increased activities. Increased global warming leads to increased human activities ranging from mineral and oil exploration to fishing and tourism as well as illegal activities. In this scenario, the Canadian government has limited capabilities to enforce its sovereignty and environmental laws. There is little, if any, cooperation between Arctic nations and there are increased tensions between Russia and the West over Arctic claims.

TAKE AWAY – AIR FORCE OPERATIONS IN THE ARCTIC

And so, our voyage into the future alternative worlds of 2020 is nearing its end. While these two scenarios are purely fictional, they are based on the current trends and scientific evidence. While the scenarios were taken to the far end of the plausible, they were developed as a think piece in order to assist military planners. Below is a list of "take aways" that are derived from studying both scenarios.

Climate change. On the one hand, climate change will dictate Air Force involvement in the Arctic, as a warmer climate will translate into increased activities in the North. On the other hand, a harsher climate may reduce human activities, but it will increase the difficulties to operate in that region should the Air Force be required to deploy into the Arctic.

Arctic surveillance. Upwards of 50 per cent of the world's undiscovered resources are estimated to lie in the Arctic. Should the Arctic experience an economic boom as a result of resource exploration and extraction, then governance, policing, and surveillance will be challenging given the sheer size of the region. As costly as this task will be, it will remain essential for the Air Force to consider the best possible options from high altitude airships (HAA), to tethered aerostats, unmanned

vehicles, and satellites. Note that, should a threat be detected, securing our remote Arctic border will be a monumental task.

SAR requirement. The Air Force will need to develop a more agile and robust response to SAR incidents in the Arctic. At the moment, SAR response time and capabilities in northern regions remain problematic. Clearly, increased permanent presence, tourism, and economic activities in the Arctic as well as expanding trans-polar air routes will ultimately require greater SAR resources in the North and greater Arctic-hardened air mobility support. A permanent SAR capability may even become a future requirement.

Increased requirement for Arctic operations. The government's proposed CFATC in Resolute Bay is expected to house approximately 100 full-time personnel. It is logical to assume that the level of Air Force effort to sustain and support the new CFATC will be more or less on par with that of CFS Alert.²⁷ Likewise, the deepwater seaport at Nanisivik will require some level of airlift to sustain operations at the new base, albeit at a lesser level.

Potential for conflicts. Mineral extraction and shipping will likely be a source of tension and dispute in the future. New shipping routes may also reshape the global transport system. While these developments offer opportunities for growth, they are also potential sources of competition and conflict for access and natural resources. Currently, the CF has few capabilities to project hard power in our High Arctic. For the Air Force and the Navy, and to a lesser degree the Army, the High Arctic may become a permanent theatre of deployment located at strategic range.

Lieutenant-Colonel Daniel J. L. Lachance is a pilot with over 3,800 hours flying helicopters as a SAR pilot and a qualified flying instructor. Lieutenant-Colonel Lachance is in charge of Concept Development at the Canadian Forces Aerospace Warfare Centre. He was also the project director for the recently published report *Projecting Power: Canada's Air Force 2035*, as well as the discussion papers entitled *Trends Shaping Canada's Air Force in the Year 2019* and *Alternative Futures for Canada's Air Force in 2020*. All documents are available at http://trenton.mil.ca/lodger/cfawc/index_e.asp.

List of Abbreviations

CF	Canadian Forces
CFATC	Canadian Forces Arctic Training Centre
CFAWC	Canadian Forces Aerospace Warfare Centre
CFS	Canadian Forces Station
DND	Department of National Defence
NORAD	North American Aerospace Defence Command
SAR	search and rescue
UNCLOS	United Nations Convention on the Laws of the Sea
US	United States

Notes

- 1. An alternative future is a possible future that occurs when certain events or other influences cause a deviation from the general direction in which a trend is moving. Alternative futures can also be caused by revolutionary breakthroughs or by a strategic shock (a sudden and/or unexpected and often powerful event or driver [an event or human activity that provides impetus or motivation to fuel or sustain a trend] that causes the trajectory of a trend to significantly deviate from its existing course) or a wild card event.
- 2. Marcus Aurelius Antonius (Roman Emperor A.D. 161-180), *Meditations* (written in 200 A.D.), http://www.quotationspage.com/subjects/the+future/ (accessed February 17, 2011).
 - 3. A trend is a tendency or movement towards something or in a particular direction.
- 4. A wild card (sometimes also called a black swan) event is a high-impact, low-probability event that would have dramatic consequences if it actually occurred. Wild cards are rare events, beyond the realm of normal expectations, which makes them almost impossible to predict. *9-11* (using commercial aircraft as missiles) is often cited as being a wild card event because of the impact it had on all our lives.
- 5. Key factors are thought to be the most important contributing features of a future security trend. The key factors are used to create the scenarios. They are made to have either extremely positive or negative effects (while remaining plausible), which create a best (utopian) and a worst-case (dystopian) scenario—the alternative futures.
- 6. Note that the best- and worst-case scenarios presented in this paper are from the perspective of future Air Force involvement in the Arctic, and not necessarily from the point of view of the local population, the environment, world politics, etc.
- 7. The United Nations Convention on the Law of the Sea is an international agreement that defines the rights and responsibilities of nations in their use of the world's oceans, establishing guidelines for businesses, the environment, and the management of marine natural resources. The Convention, which came into force in 1994, has important ramifications for Arctic states. It allows those states to claim the right to harvest mineral and non-living material in the subsoil of its continental shelf beyond the current 200 nautical miles economic zone. Note that once ratified, states have 10 years to file their claims for access and jurisdiction based on geological and other evidence
- 8. More than two-thirds of the world's large cities are in areas vulnerable to global warming and rising sea levels, and millions of people are at risk of being affected by flooding and intense storms, according to a recent study published in the journal *Environment and Urbanization*. In all, 634 million people live in the threatened coastal areas worldwide. See "Cities at risk from rising sea levels, scientists say," CBC News, http://www.cbc.ca/technology/story/2007/03/28/tech-flood.html (accessed February 17, 2011).

- 9. The term thermohaline circulation refers to the part of the large-scale ocean circulation that is driven by global density gradients created by surface heat and freshwater fluxes. The adjective thermohaline derives from *thermo* referring to temperature and *haline* referring to salt content, factors which together determine the density of sea water.
- 10. This is in reference to the climatological era known as the "Little Ice Age," a period that began about 1350, in which average wintertime temperatures abruptly turned cooler in the North Atlantic region and persisted that way for roughly 500 years.
- 11. Richard F. Pittenger and Robert B. Gagosian, "Global Warming Could Have a Chilling Effect on the Military," *Defense Horizons*, no. 33, October 2003.
- 12. Estimates indicate that the Arctic routes could reduce transportation costs by an average of 40 per cent on key Asian-European routes and cut distances by two-thirds. The simple use of economic data indicates that such reductions imply that Arctic open water could attract up to 80 per cent of the global transportation market.
 - 13. ©1994, ACIA, map ©Clifford Grabhorn.
 - 14. Data attributed to United Kingdom, The DCDC Strategic Trends Programme, the Arctic out to 2040, 52.
- 15. Image taken from "What is Climate Change?" http://www.bcca.org/ief/climate/climate_what.html (accessed February 17, 2011).
- 16. Canada is currently disputing sovereignty over Hans Island with Denmark, the ownership of the undersea Lomonosov Ridge with Russia and Denmark, as well as the location of its maritime boundary in the Beaufort Sea with the US, and the status of the Northwest Passage with the international community. These disputes will not be easily resolved and are expected to continue over the next decade. See also note 22.
- 17. The Arctic Council is an intergovernmental forum for Arctic governments and people. The member states are: Canada, Denmark, Finland, Iceland, Norway, Sweden, Russia, and the US.
- 18. The Spitsbergen Treaty (which came into force in 1925) recognizes the full and absolute sovereignty of Norway over the Arctic archipelago of Spitsbergen (now called Svalbard). There has been a long-running dispute, primarily between Norway and the Soviet Union (and now Russia) over fishing rights in the region. Note that Norway also claims that the archipelago is a part of mainland Norway's continental shelf, a position that Russia is also disputing.
- 19. SAR in the Arctic is a grave concern for the Air Force, as the region is lacking even the most basic infrastructure of road networks, airfields, staging/supply bases, or medical facilities. The potential for SAR in the High Arctic is far more likely now and in the future than at any time in the past. Because a sparse population creates a statistically low risk, it would be inefficient to locate SAR assets in the Arctic. It should be noted, however, that more than 100,000 people fly over the Canadian Arctic each day on high-latitude routes to Europe and Asia. In case of a major air disaster, it would take at least six hours for a Hercules aircraft based in Southern Canada to reach the Arctic, and much longer for helicopters (even if they were shipped by CC177, as some reassembly would be required).
- 20. The former US ambassador to Canada, Paul Celluci, has warned that terrorists might use an ice-free Northwest Passage to traffic in weapons of mass destruction. See Michael Byers, "Wanted: Mid-sized Icebreakers, Long-range Choppers, Perspective," *Globe and Mail*, 12 June 2009.
- 21. Unexploited resources in the Arctic account for about 22 per cent of the undiscovered, technically recoverable resources in the world. It accounts for about 13 per cent of the undiscovered oil, 30 per cent of the undiscovered natural gas, and 20 per cent of the undiscovered natural gas liquids in the world. About 84 per cent of the estimated resources are expected to occur offshore. Continued warming of the Arctic implies that the accessibility and profitability of these resources will increase significantly. See US Department of the Interior, "90 Billion Barrels of Oil and 1,670 Trillion Cubic Feet of Natural Gas Assessed in the Arctic," (United States Geological Survey, July 23, 2008), http://www.usgs.gov/newsroom/article.asp?ID=1980 (accessed February 17, 2011).
- 22. "Peak oil" refers to the point in time when oil production has peaked and only half of proven reserves remain. The significance in this lies in the fact that the remaining known quantity is finite and the laws of supply and demand indicate greater demands for dwindling supplies, which ultimately translates into higher prices. The date when the world reaches global peak oil production cannot be pegged exactly. The projected dates vary between the most pessimistic in 2010 and the most optimistic in 2035.
- 23. Philippe Rekacewicz and Hugo Ahlenius, UNEP/Grid-Arendal, http://maps.grida.no/go/graphic/fossil-fuel-resources-and-oil-and-gas-production-in-the-arctic (accessed February 17, 2011).

- 24. Durham University, UK, "Maritime jurisdiction and boundaries in the Arctic region," International Boundaries Research Unit, http://www.dur.ac.uk/ibru/resources/arctic (accessed February 17, 2011).
- 25. United Kingdom, Ministry of Defence, *The DCDC Global Strategic Trends Programme 2007–2036*, (Development, Concepts and Doctrine Centre, December 2006), 51, http://www.cuttingthroughthematrix.ca/articles/strat_trends_23jan07.pdf (accessed February 17, 2011).
- 26. The Lomonosov Ridge is an unusual underwater ridge of continental crust in the Arctic Ocean. It spans 1,800 km from the New Siberian Islands over the central part of the ocean to Ellesmere Island of the Canadian Arctic islands. As part of their respective UNCLOS submissions, Russia claims that the Lomonosov Ridge is an extension of the Eurasian continent. Canada asserts that the ridge is an extension of its continental shelf. Danish scientists also hope to prove that the ridge is an extension of Greenland, which would make Denmark another claimant to the area. See also note 13.
- 27. CFS Alert is the most northern permanently inhabited settlement in the world. It is situated on the northeastern tip of Ellesmere Island in the Canadian Arctic Archipelago. In 2008, CFS Alert housed approximately 70 full-time personnel. Twice a year, the station receives major replenishments. Operation BOXTOP is the name given to the biannual resupply of CFS Alert. Using USAF Base Thule in Greenland as a staging point, for two to three weeks every spring and fall, the Air Force operates day and night to fly fuel and supplies to the station. In the past several years, a typical BOXTOP operation moved over 431,000 kilograms (950,000 pounds) of freight and more than 1,386,558 litres (305,000 imperial gallons) of fuel into CFS Alert. To accomplish this level of activity, four CC130s, one CC150, and one CC177 aircraft flew in total more than 500 hours and moved more than 130 chalks of freight. In addition, CC130 aircraft regularly fly into and out of CFS Alert (approximately every week) to transport perishable supplies. These flights originate from 8 Wing Trenton, and they contain food, medical supplies, and CF personnel rotating through CFS Alert.



Air Chief Marshal Frank Miller: A Civilian and Military Leader

Raymond Stouffer

Reprint from Sic Itur Ad Astra: Canadian Aerospace Power Studies Volume 1 - Historical Aspects of Air Force Leadership 2009

Introduction

On Thursday, April 28, 1960, the *Ottawa Citizen* wrote that Frank Miller, the ex-Air Marshal and, more recently, the Deputy Minister (DM) of National Defence, had become the Diefenbaker's Government choice as Chairman of the Chiefs of Staff Committee (COSC), replacing General Charles Foulkes. Miller's twenty-four years' service in the Royal Canadian Air Force (RCAF) "[had] given him a valuable store of knowledge of all aspects of defence." As DM, Miller was "hailed as one of the keenest and most incisive minds in the Defence Department." In the same article, it was implied that changes were necessary in Canada's military that demanded Miller's experience, management skills and leadership. Miller was "believed one of the very few men suited to take Canada's military element through the ultimate transformation to a unified force." Frank Miller's return to uniform therefore came with solid credentials and high expectations. He was to become Canada's highest ranking military officer. But few Canadians knew him at the time and fewer still today.

The purpose of this paper is, in part, to bring to light the public life of Frank Miller to better understand who he was and why he was chosen as Foulkes's replacement. The reality that such an exercise has not been done previously says much about the lack of scholarly interest in the cold war RCAF generally and the dearth of biographies of senior Canadian airmen specifically. As remarkable as Miller's career is the fact that it is today largely unknown and therefore unappreciated. Comprehending Miller's military and civilian service not only tells us why he was selected as Chairman of the COSC, it also addresses the larger question of military leadership in peacetime. It is proposed that those responsible for Miller's selection felt that he possessed the requisite leadership capabilities and understanding of the needs of a peacetime military better than his peers.

To support this argument, this paper focuses on two aspects of Frank Miller's career. First, his ascendancy through the ranks and increasing senior appointments will be described in the context of the evolution of a peacetime and wartime RCAF. Second, Miller's professional accomplishments will be compared to those of two other successful senior officers and contemporaries, Roy Slemon and Charles Foulkes. Slemon was four years older than Miller and joined the RCAF earlier. These two airmen shared similar flying and command postings for over three decades. Their mercurial rise in the wartime and postwar RCAF made them professional rivals. Slemon would get the nod and become Chief of the Air Staff (CAS) in 1953. Seven years later Miller would reach higher rank as Chairman of the COSC and Chief of the Defence Staff (CDS).

One historian has argued that Charles Foulkes understood better than his competitors that military leadership in the peacetime cold war required special skill sets. Foulkes was sensitive to the reality that the existence of expensive peacetime forces-in-being challenged Canadian governments that had to balance domestic and international political interests.⁴ This paper will argue that Frank Miller was as good as, if not better than his predecessor in meeting the challenges of leading a Canadian peacetime military during the early cold war. Miller's military and civilian careers not only distinguished him from his peers, but from Foulkes as well. Frank Miller, not Charles Foulkes, was deemed the best military leader to guide the Canadian military through the turbulent years of integration and unification.

Life in the RCAF – Part One

One major challenge writing about Frank Miller is working with scarce sources. Mainly due to the fact that Miller did not keep a personal diary, there are few primary sources available describing Frank Miller's professional career, and fewer still that mention his early life. Secondary sources are of little help. Fortunately, sufficient evidence exists from which a reasonable picture emerges.

Frank Miller was born in Kamloops, British Columbia, April 30, 1908. He attended Kamloops Public and High Schools. From 1925-31 he completed a Bachelor of Science degree in civil engineering at the University of Alberta. During his university years in Edmonton, Miller was a member of the Canadian Officer Training Corps.⁵ Upon graduation Miller wanted to be a pilot. Like Roy Slemon

a few years earlier, Miller was accepted into the RCAF because interwar air planners "considered an engineering degree an essential qualification to be a pilot." Further, they both had demonstrated their desire to be in the military as members of the Canadian Officer Training Corps.

Frank Miller was commissioned in the RCAF Regular Force on September 15, 1931. The following month Pilot Officer Miller was posted to No. 1 Squadron at Camp Borden, Ontario. By December 1931 he had obtained his pilot's wings after completing a series of flying training courses. On December 16 he was promoted to flying officer. Although Frank Miller joined the RCAF because he wanted to fly, he appreciated neither the national scope of the Service nor its nascent military capabilities. Prior to enlistment he had the impression that the RCAF was limited to carrying out non-military roles. He expected to be assisting other government departments in activities such as aerial mapping, fire-fighting as well as communication and transportation flights. For the most part, Miller's preconceptions about the interwar RCAF were correct. His own experiences would confirm that for much of the interwar period Canadian airmen were "bush pilots in uniform." Miller was nevertheless impressed by the range of air power roles practiced by the RCAF in the early 1930s.

Unfortunately for Frank Miller and his Air Force contemporaries they joined the RCAF just when the Great Depression set in. Desperate to fund relief programmes, the Bennett Government slashed the military budget in 1932. The RCAF was forced to make drastic cuts in personnel. As Miller recalled: "The earth fell in ... I was kicked out [of the RCAF]!" Luckily for Miller his temporary "leave" from the Air Force was short-lived. In July 1932 he was employed at Air Force Headquarters (AFHQ) in Ottawa. In January 1933 he was back at Borden to continue his flying training. This time it was at the School of Army Cooperation.

Frank Miller was one of the lucky few to have had the opportunity to continue his training during these years of the "Big Cut." In the period 1932-33, the RCAF saw its personnel strength drop from 906 officers and men to 694. The budget was cut by over a million dollars from the pre-Depression years to \$1,405,000. As Miller himself experienced, airmen were released and pilot training was drastically curtailed. In some instances, flying training came to a complete stop. Further, RCAF expansion was impossible due to lack of funds for base construction, operational and training flights as well as new aircraft purchases. Budget cuts also forced a reduction in professional development for the more experienced personnel. This training was expensive. The only staff courses available for senior Canadian airmen to learn the latest in air power theory as well as command and staff duties were taught overseas by the Royal Air Force. 11

Although flying activity at Camp Borden was severely cut back at the time, Flying Officer Miller was able to complete his army cooperation course from February 1 to May 31, 1933. He logged thirty-four hours on the Avro 621 Tutor and a single hour on one the RCAF's three Consolidated O-17 Courier aircraft. This course was clearly designed to train RCAF pilots how to operate with the army. He was taught aerial photography, map reading, air reconnaissance, artillery observation and Morse code. 12

Devoting precious training time supporting the army was anathema to Canadian airmen who closely followed air power developments in Britain. Royal Air Force (RAF) doctrine was based on the primacy of strategic bombing. Support to surface forces was not a priority. Unfortunately for the RCAF, it was not in a position to put this theory into effect. Until 1938 it remained subordinate to the Chief of the Army General Staff (CGS). Senior army officers wanted aviation controlled at division and corps level as was the case in the First World War. The demands of the Canadian Army aside, the reality of the Depression RCAF was being content conducting any type of operational training given the limited number of aircraft and pilots on strength.

For the remainder of 1933, Flying Officer Miller continued his flying training at Borden and Ottawa, Ontario. He successfully completed his Instrument Flying Course at Borden during the month of June. Flying the de Havilland (D.H.) 60 Gipsy Moth, predecessor to the ubiquitous wartime trainer, D.H. 62 Tiger Moth, Miller was given an overall course rating of "very good" by his instructor, Squadron Leader R.S. Grandy. According to Grandy, Miller made excellent progress on the course and had no major faults. During the month of July Miller attended the Seaplane Conversion Course at RCAF Ottawa (Rockcliffe) where he flew the D.H. 60 Floatplane and the Vickers Vedette. From August 1 to December 22, 1933, Flying Officer Miller was back in Borden to take the Squadron Armament Officers'

Course at the Air Armament and Bomber School. This course allowed him to log more flying time on a variety of RCAF aircraft including the Fairchild 71, the Courier, the Armstrong Whitworth Siskin and the Gypsy Moth. Remarkably therefore, during a year in which most flying activities had come to a standstill in the RCAF, Frank Miller was somehow able to complete four full flying courses!¹³

Within the financial restrictions of the Depression years, the RCAF Permanent Force maintained a tenuous national presence and semblance of flying activity. On the West Coast the RCAF operated out of RCAF Station Vancouver, home to No. 4 Flying Boat Squadron and two mobile detachments. Flying Officer Miller was posted there in January 1934 to begin his first operational tour. In addition to his primary duty as a squadron pilot, he was made unit adjutant. In 1934 the "clouds of war" in Europe were still several years away. As such, No. 4 (FB) Squadron continued to perform non-military functions in support of other federal and provincial departments. Miller and his fellow squadron pilots flew Vedette, Vancouver and Fairchild flying boats on anti-smuggling and aerial photography missions. Is

In 1935 the career paths of Frank Miller and Roy Slemon would meet for the first time. Between 1933 and 1938 Slemon was employed in Borden as a flight instructor and staff officer in RCAF Headquarters. ¹⁶ In April 1935 Flight Lieutenant Slemon was Miller's instructor on the Air Pilotage Course. He rated Miller as "above average." Later that June, Miller successfully completed the Flying Instructor Course. He was rated as an "excellent student" by no less than Squadron Leader G.E. Brookes, future Air Officer Commanding, No. 6 (RCAF) Group. ¹⁷

Between 1935 and 1938 Frank Miller filled various billets as a flight and air navigation instructor. Miller was promoted to the rank of flight lieutenant April 1, 1937 – presumably, no "April Fools Joke"! The next month he moved from the Flying Training School in Borden to the Air Navigation and Seaplane School at Trenton. In September 1938 his training took him to Britain. The RCAF posted Miller to the School of Air Navigation, RAF Manston, to attend the Specialist Air Navigation Course. Prior to his departure, Frank Miller got married to Dorothy Virginia Minor on May 3, 1938. The wedding took place in Galveston, Texas. 19

When Flight Lieutenant Miller went overseas in the fall of 1938 there were genuine fears of war. Although Prime Minister Mackenzie King privately accepted the reality that Canada would come to Britain's side if war was declared against Nazi Germany, the Defence Department was limited to planning for continental defence. Politics aside, Canadian defence planners, including the RCAF, could not ignore the likelihood of another war in Europe. A major challenge was to bring the small peacetime Canadian military to a wartime footing. To do so, defence planners had to identify those sailors, soldiers and airmen that had demonstrated superior professional and leadership skills to lead such an expansion.²⁰ Frank Miller was one such airman.

If the Canadian military recognized the need to expand to a wartime military, it did not have the means with which to accomplish this goal during the immediate years preceding the Second World War. Lacking sufficient resources in Canada, the RCAF had to send selected airmen to Britain to receive specialist training from the RAF.²¹ Flight Lieutenant Miller was sent to Britain because by this time his superior airmanship had come to the attention of his Air Force superiors. Miller had also proven leadership potential superior to that of his peers. On April 1, 1939, he was promoted to the senior officer rank of squadron leader.²² Upon completion of the course, the RCAF expected Miller to return to Canada with advance knowledge of air navigation. More importantly, senior air force leaders counted on Miller commanding air navigation schools as part of an expanding air training programme.

When Canada declared war against Germany September 10, 1939, the RCAF recalled Squadron Leader Miller. The plan was indeed for Miller to lead a training school as part of the expected wartime expansion plan.²³ Little did the RCAF know that this plan was about to get much bigger. By the end of September, the King Government was deliberating the details of its immediate commitment to Britain and her Commonwealth allies. The British were shocked that King's immediate offer was but one infantry division. Ottawa was then asked if Canada would support a Commonwealth air training programme as part of the British Empire Air Training Scheme.

After several months of acrimonious negotiations, the King Government agreed to commit significant financial, material and personnel resources to the creation of such a major national

undertaking.²⁴ The understanding was that the organization and operation of the British Commonwealth Air Training Plan (BCATP) was to be Canada's main contribution to the development of Commonwealth air power. In fact King's acceptance to run the BATCP was predicated on his belief that it would substitute for providing substantial military forces to the war effort. In any event, this would not prove the case. Whatever King's motivation, to the miniscule RCAF this national responsibility represented "a challenge of great magnitude." Air Vice Marshal Croil, Chief of the Air Staff, equated establishing and operating the BCATP "equivalent of maintaining 50 squadrons in the field." Before the war the RCAF was hard pressed to train 125 pilots a year. It was now asked to train 540 pilots, 340 observers and 580 wireless operators / air gunners every four months! Fortunately for the RCAF, it had experience from the previous war in training allied aircrew. Equally important, it had seasoned and proven leaders like Frank Miller who would make this air training scheme work.

Even before the final details of the BCATP were signed on Mackenzie King's birthday, December 17, 1939, sites for the training schools were being selected and surveyed. Further, contracts for flying training and logistical needs were let. By far the largest need was for civilian and military flying instructors. Many of the young RCAF pilots who had counted on going overseas to fly in combat were disappointed when they were told that they were to remain in Canada as instructors. Squadron Leader Miller was too busy to be concerned about operational flying opportunities. Just as the Anglo-Canadian negotiations for the air training scheme began Miller was appointed Officer Commanding (OC) of the Air Navigation and Reconnaissance School located at Trenton. This would be the first of several important postings in which he commanded specialist training schools within the BCATP. In all instances, Miller's performance evaluations were consistently rated as outstanding. Moreover, he would be recommended by several prominent senior RCAF officers for accelerated promotion ahead of his peers.

While at the Air Navigation and Reconnaissance School, Miller's superiors included the two future Air Officers Commanding of No. 6 (RCAF) Group, Group Captains G.E. Brookes and C.M. McEwen. In January 1940 McEwen wrote that Miller was reliable, tactful and energetic and that he demonstrated good judgement and common sense. He added that Miller was especially well qualified in his duties and an excellent leader. In September 1940 Brookes wrote that Miller was mature in judgement and had shown much initiative in meeting the many problems of his school during the early months of operation. Brookes added that Miller demonstrated exemplary conduct and was recommended for accelerated promotion.²⁹

In November 1940, No.1 Air Navigation School (ANS) was relocated to Rivers, Manitoba. Within a month of moving to the school's new location, Miller once more impressed his superiors. Group Captain Sully, future Air Member for Personnel in AFHQ, noted that Miller did splendid work under difficult conditions as OC of No.1 ANS. Sully recommended Miller for accelerated promotion to acting wing commander. This recommendation was strongly supported by Air Commodore Shearer. Frank Miller clearly proved himself a most capable officer leading No.1 ANS through the tough beginnings of the BCATP. Miller was indeed promoted to wing commander in December 1940 and six months later was posted as OC of No. 2 ANS located in Pennfield Ridge, New Brunswick.³⁰

Miller's year at Pennfield Ridge proved as successful as his previous tours at Rivers and Trenton. Group Captain Costello wrote that with regards to both training and administration, Miller organized and commanded Pennfield Ridge in a very efficient manner. Costello's recommendation for Miller's accelerated promotion to group captain was endorsed by Air Vice Marshal A.A.L. Cuffe, Air Member for Training. In May 1942 Miller was posted back to Rivers as OC of No.1 Central Navigation School. He then paid the price for success once more as he was promoted to acting group captain two months later and was sent east to Summerside, P.E.I., as Commanding Officer of the newly created No.1 General Reconnaissance School (GRS).³¹

Although Miller would only spend six months at Summerside he was able to bring No.1 GRS to a high standard of training during this period. In January 1943 Air Vice Marshal Cuffe remarked in his assessment of Group Captain Miller that he was highly intelligent and possessed a pleasing personality. He added that Miller's high standards of efficiency were reflected in the excellent condition of the training school. In their evaluation the following month, two more rising stars in the RCAF, Air Commodore Morfee and Air Vice Marshal G.O. Johnson, stated that Group Captain Miller had done

an excellent job as Commanding Officer of No.1 GRS. They also wrote that Miller deserved credit for the high quality of training and efficient administration of the station.³² In the spring of 1943 Miller's superiors concluded that his excellent work to date in the BCATP had prepared him for duties in higher headquarters. Group Captain Miller was therefore posted to Air Force Headquarters in Ottawa as Director of Training Plans and Requirements.³³

Miller was employed at AFHQ from January 1943 to April 1944. During this period he was promoted to Acting Air Commodore; he finished his headquarters tour as Director of Air Training and Deputy Member for Training. Reflecting back over the previous four years, Miller's accomplishments as a leader of BCATP training establishments solidified his reputation as an outstanding air force officer. By the time he worked at AFHQ he was one of the most senior airmen overseeing the air training scheme at the height of its operation. However, by the early spring of 1944, the BCATP was about to wind down. Victory was in sight and the RCAF needed the talents of airmen like Frank Miller overseas to fill command positions. In April 1944, Miller was posted to No.6 (RCAF) Group Headquarters, located at Allerton Hall, Yorkshire. To do so, he relinquished his rank as Acting Air Commodore.³⁴

Between April and June 1944, Group Captain Miller "learned the ropes" of the myriad of staff work associated with leading Canadian bomber operations. During this period Miller would once more work with Roy Slemon. The latter had served as the Senior Air Staff Officer in No. 6 (RCAF) Group Headquarters since its inception in January 1943. Having been the right hand man for Air Vice Marshals Brookes and McEwen, Air Commodore Slemon's experience proved invaluable to his protégée Frank Miller.³⁵

In the summer of 1944, Miller received his first command of an operational bomber unit, RCAF Station Skipton-on-Swale.³⁶ For security reasons Miller's rank and position "officially" barred him from flying combat missions. However, what little evidence there is detailing his tours in 6 Group suggests that he showed marked concern for his subordinates. His challenge was to lead and encourage his aircrews confronted with poor odds of surviving their bomber tours. He met his crews upon their return and was actively involved in their debriefing.³⁷ Further, a close review of the war diaries of 424 and 433 Squadrons reveals that Group Captain Miller "flew" on a mission over the Falaise area of Normandy on July 17, 1944. Tactical bombing from medium altitude was an uncommon and dangerous procedure for bomber crews,³⁸ but he wanted to get a first-hand look at how his crews were supporting the allied advance in France.

Miller's first operational command impressed his superiors. Air Vice Marshal McEwen wrote in August 1944 that Miller was a good organizer and had a solid grasp of human nature. He added that Miller was untiring in his efforts with the operational functioning of his station.³⁹ On October 14, 1944 he was promoted, once again, to Air Commodore and appointed Commanding Officer of No.61 Base, located at Topcliffe.

By the spring of 1945 Frank Miller had become a respected and experienced wartime station commander in 6 Group. During this period he also commanded RCAF Base No. 63, Leeming, Yorkshire. Up to the challenge, Miller was able to maintain the Leeming squadrons' sortie rates in the face of changing aircraft types, aircrew conversion training and personnel rotations. Noteworthy was his appointment as Roy Slemon's deputy in command of the RCAF Tiger Force in July 1945. This unit was to be Canada's commitment to a Commonwealth bomber force operating with the Americans against Imperial Japan. However, with the surrender of Japan later that summer, plans for the force were cancelled and Miller was repatriated to Canada in September 1945.⁴⁰

Wartime demobilization was swift and dramatic. From a wartime peak of over one million men and women in uniform, the King Government slashed the size of its post-war military to less than fifty thousand all ranks. The prime minister and his closest advisors understood, however, that geostrategic realities prevented a return to a paltry peacetime force that existed before the war. The new threat to world peace was a belligerent Soviet Union. Armed with long-range bombers and, after September 1949, atomic weapons, the Soviets threatened continental North America. Ottawa could neither ignore this threat nor the reality that it had to move closer to the United States (US) to jointly defend the continent from strategic attack. Canada therefore joined the US in establishing the North American Air Defense Command (NORAD). Prior to this unprecedented peacetime commitment, Canada became

a member of the North Atlantic Treaty Organization (NATO). The Soviet threat extended to all of Western Europe as well as North America. Again departing from tradition, the Canadian government created large regular forces-in-being. In the new nuclear age the Western alliance underpinned its offensive and defensive strategies on air power. By the early 1950s the RCAF would therefore become the fastest growing and most important of the three Services.⁴¹

Remarkably, Air Commodore Miller's career never slowed down during this transitory period. He was clearly being groomed as a leader in the post-war RCAF. With flying mostly limited to aerial mapping and communications during the period 1945–48, Miller was posted to Air Materiel Command; first as Chief Staff Officer, and then in June 1946, as the Air Officer Commanding. Between August 1948 and September 1949, he attended the US National War College. The friendships and contacts Miller made with fellow American and NATO students were most opportune and greatly benefitted the RCAF in its future relations with alliance members. In the fall of 1949 Miller was posted to AFHQ as Air Member Operations and Training. Two years later he was promoted to the rank of Air Vice Marshal and became Air Marshal Curtis's Vice Chief of the Air Staff. An important role was serving as the Canadian Air Representative on the Canada-US Permanent Joint Board on Defence. In this regard, the CAS credited Miller as having made an outstanding contribution in the field of Canadian-US military relations. At a time when cooperation between the RCAF and the United States Air Force (USAF) was increasing rapidly, Miller was the most senior RCAF contact with the USAF in terms of both discussing common doctrine and equipment purchases and planning for the air defence of North America.

It is not clear if Miller expected to replace Curtis as Chief of the Air Staff. Existing records suggest that the CAS had been grooming Roy Slemon, who indeed replaced him in January 1953; this conclusion is supported by the fact that Curtis had been in the job since 1947. The implication is that Defence Minister Claxton allowed Curtis the extra time as CAS so that Slemon could get more experience. Frank Miller had to concede this coveted appointment to his old friend and competitor. Yet the following year, Air Marshal Slemon provided Miller a great career opportunity. He arranged with General Foulkes to have Miller posted to Supreme Headquarters Allied Powers Europe as General Lauris Norstad's Vice Deputy Air. The RCAF insisted that allocating such a prestigious air staff position was appropriate given Canada's contribution of an air division of twelve fighter squadrons in NATO's central area. Frank Miller did not become CAS, but he became Canada's highest ranking airman in NATO.

On June 14, 1954, Defence Minister Claxton used the occasion of the visit to Ottawa of General Gruenther, Supreme Allied Commander Central Europe (SACEUR), to announce Miller's new appointment. Although there was an embarrassing moment when Claxton erroneously announced that Miller was to be immediately promoted to Air Marshal, the occasion was an important one for the RCAF generally and for Miller personally. In part General Gruenther had come to Ottawa to convince defence officials of the importance of collective defence in the West and the need for Canada to continue its support. SACEUR emphasized that air power had become the dominant factor in defence planning and he thanked his Canadian hosts for its increasing participation in this field. It was therefore most appropriate to have a highly recommended airman like Frank Miller join NATO's senior staff.⁴⁶

A year after his appointment was announced, Frank Miller was promoted to Air Marshal. He therefore joined Roy Slemon as the most senior airmen during a period that became the "Golden Years" of the RCAF. In addition to the twelve Sabre-equipped fighter squadrons in Europe, the RCAF had nine regular force air defence squadrons at home equipped with the Canadian made, all-weather CF100. By 1955 the RCAF was allocated more of the defence budget than the Royal Canadian Navy (RCN) and Canadian Army combined. That same year the RCAF's strength of 51,000 exceeded that of the Canadian Army. 1955 would also be a momentous one for Frank Miller. While attending a NATO meeting in Paris that year, Prime Minister St Laurent, accompanied by the Deputy Minister of National Defence, Bud Drury, paid Air Marshal Miller a visit. To an astonished Miller, the Prime Minister wanted him to return to Canada and replace Drury as DM.⁴⁷

Frank Miller the Senior Bureaucrat

So how did it come about that the Prime Minister wanted an active serving airman to be DM of the Defence Department? Miller recalled years later he sent a message to the Prime Minister asking him to reconsider. Miller stated that as far as he knew, the job was for a civilian, not a military man

because the DM represented the civilian employees of the Department. Drury, unhappy being replaced, agreed with him. But Drury's superiors made it clear that Miller was not being "invited, but told to be his replacement." Prior to taking the job six years earlier, Drury came from a similar background as Miller. He was a graduate of the Royal Military College and had risen to the rank of brigadier during the war. So there was no negative reaction by senior public servants to Miller's appointment as DM. The ex-Brigadier Drury had already set the precedent and had been well received in the Department. He reluctantly relinquished the job to Miller, and then only because of personal family reasons. 49

As Deputy Minister, Frank Miller's responsibilities changed dramatically in scope and kind. Although primarily responsible for managing departmental civilians and coordinating the Defence Department budget, his influence in the pre-integration and unification Canadian military was pervasive. The power structure was the myriad of senior committees. Miller sat on all of them. He was a member of the Defence Council, the Chiefs of Staff Committee and the Defence Research Board. In the absence of the Defence Minister, Miller sat in on meetings of the Cabinet Defence Committee, and on occasion, in Cabinet. He rarely saw St Laurent and Diefenbaker, but he had extensive contacts with his immediate bosses, Ralph Campney and George Pearkes. He also recalled getting along well with Charles Foulkes. He

The evidence suggests that Miller faced two major challenges. One was his desire to better integrate the civilian and military chains of command. The other was the need to change the overall structure of the Defence Department. He made some headway towards solving the first problem. Although civilian employees were guided by separate regulations, they became better integrated into the military operational chain. Little progress was made in the matter of defence structure. Here, to some extent, Miller shared the frustrations of Foulkes. From their experiences in the COSC, they understood that until such time as the right of the Service Chiefs to see the Minister directly was removed, there would continue to be inefficiency in the management of the Department. Having spent five unsuccessful years trying to get the Service Chiefs to better coordinate and rationalize their programme demands, Miller knew that change was necessary if the Department was to meet its assigned defence tasks. However, internal changes were not the only answer. Miller indeed faced inter-Service animosity. He also had to deal with a parsimonious Treasury Board insensitive to the reality that a steadily decreasing defence budget was a larger concern than departmental inefficiency. 52

If Miller recollected that he got along well with General Foulkes, minutes to COSC meetings suggest that they did not always agree. Interesting is their differences were not limited to the subjects of defence estimates and civilian personnel, traditional responsibilities of the DM. They also disagreed on operational questions. Miller held strong views on a range of strategic policy matters. He made recommendations regarding the use and storage of nuclear weapons, promoted disarmament talks and commented on strategic military intelligence assessments. It is understandable therefore that Miller and Foulkes did not have the same opinion on such a range of subjects. That said, Miller deferred to the Chairman's authority at these meetings. Moreover, on a private basis and in other committees like Defence Council, Miller and Foulkes "had a very good relationship [and] worked closely with [each other]." He worked closely with [each other]." He worked closely with [each other].

Miller's frustrations with the Service Chiefs notwithstanding, for the most part he had a good professional relationship with them. This included working with his old friend and rival, Roy Slemon. They cooperated well and were united in their defence of the ill-fated CF105 Arrow programme and the need for a joint Canada-US air defence command. With the creation of NORAD in 1957 Slemon was appointed Deputy Commander; another prestigious career assignment. More importantly as far as the Diefenbaker government was concerned, Frank Miller's close ties with the US defence establishment facilitated the successful signing of the Development and Defence Production Sharing agreement with the Americans. To the Conservatives, NORAD meant integrated defence production as well as integrated continental air defence. See

Miller's extensive contacts with the USAF also benefitted Canada's major equipment purchases and systems upgrades, including CF104 Starfighters, BOMARC Missiles and CF101 Voodoos. Miller also oversaw the funding and contracting of such high cost weapons platforms. It was therefore not surprising that Miller often commented on RCAF operational policy during meetings of the COSC. This may not have pleased Hugh Campbell, the CAS; however, the associated infrastructure, logistics

and personnel costs were Miller's concern as DM. Moreover, Miller more often than not supported the interests of the RCAF.⁵⁸ Finally, as DM, he was in a better position than CAS to appreciate the need to rationalize RCAF demands with those of the other Services.

Frank Miller may not have wanted the job as Deputy Minister, but once committed, he performed his duties as exceptionally as was the case in his previous service career. This is not to say that he could do the job alone. To assist him in the civilian side of the Department, he leaned heavily on Elgin Armstrong. This had two positive outcomes. First, Armstrong's extensive background in civilian personnel and financial matters greatly assisted Miller in that important area of his work. Second, and more importantly for the future of the Defence Department, Miller prepared Armstrong as his replacement. Frank Miller was therefore able to combine a firm grasp of civilian matters in National Defence with what he already understood to be the real issues facing the military side.

Back in Uniform – The RCAF's Oldest Recruit

When it became public knowledge in early 1960 that Diefenbaker wanted Foulkes replaced, those knowledgeable about the Defence Department surprisingly suggested that Frank Miller was a serious candidate. The logical choice was one of the Service chiefs. The Chief of Naval Services, Vice Admiral Dewolf, appeared to have the inside track if the government decided to set precedent and rotate the chairmanship among the three Services. But the Chief of Naval Services was too old. Further, the RCN was also the smallest of the three Services from the point of view of manpower and expenditure. Reflecting the diminished importance of the Canadian army in the cold war, the Chief of the Army General Staff, Lieutenant-General Clark, was not seen as a serious choice. The government wanted neither a sailor nor a soldier as Foulkes's replacement. Yet surprisingly, the ranking airman was equally unacceptable. At this time Ottawa faced several critical defence policy issues associated with air power and nuclear weapons. But Hugh Campbell was not chosen. Defence Minister Pearkes informed Frank Miller that he was being brought back into uniform as the next Chairman of the Chiefs of Staff Committee.

In April 1960 Miller dusted off his Air Marshal uniform and started his second career in the RCAF as its "oldest recruit." On June 2, he chaired his first COSC meeting. On September 1, 1961, Frank Miller was promoted to Air Chief Marshal; the only active Canadian airman to hold that rank. ⁶¹ When the Liberals returned to power in 1963 Miller worked with Defence Minister Hellyer towards the integration and unification of the Canadian military. In August the following year, Miller became Canada's first Chief of the Defence Staff. Noteworthy is that Hellyer retained Miller as CDS for another two years knowing that his senior military officer supported the military's integration but not unification. Charles Foulkes tried to convince Prime Minister Pearson and Hellyer to permit him to return as CDS because of his unequivocal support for the Defence Minister's proposed structural changes to the country's military. Yet Hellyer stayed with Miller, writing later that his CDS had "the right qualities."

In 1966 Frank Miller retired and left the future of the Canadian Forces in the hands of his boss. Under Miller's direction most of the hard work was done to prepare the military for change. Loyal to the end, his retirement allowed Hellyer to choose a CDS completely committed to leading a unified Canadian military. Miller and his wife spent their retirement years in Charlottesville, Virginia. Frank Miller passed away October 20, 1997. Sadly like his public life, few Canadians took note.

Conclusion

By describing the career of Frank Miller this paper has accomplished two things. First, more is known about this remarkable man whose thirty-five years of service gives an insight into the maturation of the RCAF through four distinct periods: the Depression, the Second World War, the postwar and the cold war. He became an accomplished airman and leader. His operational tours and professional training in Britain and the United States prepared him for the challenges confronting Canada's Air Force as it recovered from post-war retrenchment and expanded once more during the cold war. By the mid-1950s Frank Miller's brilliant career had not only been noticed by senior officers, but by politicians and senior public servants as well. He was "ordered" by Prime Minister St. Laurent to become the Deputy Minister of National Defence. This unprecedented event was followed by another five years later when George Pearkes brought Miller back in uniform as the military's most senior officer.

This paper's second accomplishment therefore follows from the first. Describing Frank Miller's career answers the question as to why he rose to the highest military rank to lead a peacetime military. His consistent outstanding performance and experience gained as a senior officer and public servant placed him at the top of the competition. No doubt his air force background and experience working with Canada's allies made him a preferable candidate to his navy and army peers. As an airman, he also benefitted from the reality that cold war nuclear strategy relied heavily on air power. More money was spent on the RCAF than the Canadian Army and RCN combined. Yet the government did not choose Miller the airman. There was more. Lauded for his work as DM, Miller's civilian experience was as important in leading a peacetime military as was his military background. Miller had a proven career record of excellence, dedication and loyalty.

These were the "right qualities" to which Hellyer referred. They set Miller apart as a leader from other ranking officers. These personal and professional attributes also distinguished Miller from Roy Slemon and Charles Foulkes. These two contemporaries of Miller were themselves outstanding leaders and enjoyed successful military careers. Fortunately for them, their professional accomplishments overshadowed those of Frank Miller because of previous published work and in the case of Foulkes, an extensive legacy written by the man himself. This work has evened the scholarly playing field. It has provided the reader with an understanding and appreciation of the remarkable public life of Frank Miller. By doing so it not only establishes him as an outstanding leader of the cold war military, but as one of the best. \odot

Votes

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 - 2. Ibid.
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- 4. Sean M. Maloney, "General Charles Foulkes: A Primer on How to be CDS," in Warrior Chiefs: Perspectives on Senior Canadian Military Leaders, ed. Bernd Horne and Stephen Harris (Toronto: Dundurn Press, 2001), 219.
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- 6. Sandy Babcock, "Air Marshal Roy Slemon: The RCAF's Original," in Warrior Chiefs: Perspectives on Senior Canadian Military Leaders, ed. Bernd Horne and Stephen Harris (Toronto: Dundurn Press, 2001), 258.
 - 7. Career summary for Air Member for Personnel (AMP), August 28, 1946, Miller Service Record.
- 8. Air Chief Marshal Miller (Retired) interview by Douglas Bland, September 22, 1992, DHH. Subsequent references will be quoted as "Bland Interview."
 - 9. Bland Interview.
 - 10. Larry Milberry, Sixty Years: The RCAF and CF Air Command 1924-84 (Toronto: CANAV Books, 1984), 47.
- 11. W.A.B. Douglas, The Creation of a National Air Force: The Official History of the Royal Canadian Air Force Volume II (Toronto: University of Toronto Press, 1986), 120.
 - 12. Career summary, August 28, 1946.
 - 13. Career summary written for Paul Hellyer, August, 1966, Miller Service Record.
 - 14. Ibid.
- 15. Milberry, 53. During the depression years the RCAF would consume half their civil flying time conducting anti-smuggling patrols for the Royal Canadian Mounted Police (RCMP). See Douglas, 117.
 - 16. Babcock, 264.
 - 17. Career summary, August, 1966.
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 - 19. Career summary, August 28, 1946.
- 20. Brereton Greenhous, Stephen J. Harris, William C. Johnston and William G.P. Rawling, *The Crucible of War 1939-1945: The Official History of the Royal Canadian Air Force Volume III* (Toronto: University of Toronto Press, 1994), 13.
 - 21. Douglas, 145.
 - 22. Career summary, August 28, 1946.
 - 23. Ibid.
 - 24. Greenhous et al., 20-23.

- 25. Unknown author, "The Canadian Overseas Air Force Policy," undated DHH summary, File 83/698, 1.
- 26. Ibid.
- 27. Ibid.
- 28. Career summary, August 28, 1946.
- 29. Ibid.
- 30. Ibid.
- 31. Ibid.
- 32. Ibid.33. Ibid.
- 34. Bland Interview.
- 35. Career summary, August 28, 1946.
- 36. For reasons unknown, official records omit Miller's posting to RCAF Station Skipton-on-Swale. The exact date he arrived there is also not clear. This author has determined that Miller left No.6 Group HQ sometime in June or early July 1944 well before the official record which has him leaving HQ for Topcliffe in September 1944. Greenhous et al., 915. See also Miller Service Record.
 - 37. Ibid., see photo, 495.
 - 38. Historical Reports, RCAF Station Skipton-on-Swale, July 17, 1944, DHH.
 - 39. Career summary, August 28, 1946.
 - 40. Ibid.
- 41. Major Stouffer, "An Expression of Canadian Nationalism: The History of No.1 Air Division and RCAF Cold War Air Power Choices" (PhD Thesis, Royal Military College of Canada, January 2005), Chapters 1 and 2.
 - 42. Undated note by Air Marshal Curtis. Miller Service Record.
 - 43. Career summary, August 28, 1946.
 - 44. Babcock, 264.
 - 45. Letter from Air Marshal Slemon to General Norstad, June 5, 1954, Miller Record of Service, DHH.
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- 50. Douglas L. Bland, Chiefs of Defence: Government and the Unified Command of the Canadian Armed Forces (Toronto: Brown Book Company Limited, 1995), 154-8.
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 - 52. Ibid.
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- 56. Jon B. McLin, Canada's Changing Defense Policy, 1957-1963: The Problems of A Middle Power in Alliance (Baltimore: John Hopkins University, 1967), 178-81.
- 57. Minutes of a Special Meeting of the Chiefs of Staff Meeting, paragraph 27, December 4, 1957, File 2002/17, Box 71, Joint Staff Fonds, DHH.
- 58. As an example see Minutes to the 608^{th} Meeting of the Chiefs of Staff Committee, paragraph 17, File 2002/17, Box 71, Joint Staff Fonds, DHH.
 - 59. Bland Interview.
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 - 61. Lloyd Breadner was promoted to Air Chief Marshal upon retirement in 1945.
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Major Raymond Stouffer

Major Raymond William Stouffer was born April 21, 1956 at Baden-Soellingen, West Germany. He is the only child of Chief Warrant Officer (retired) Norman Hollis Stouffer and Gertrud Waltraud Stouffer (nee Schneider).

Major Stouffer joined the Canadian Armed Forces on August 10, 1975 and attended the Royal Military College of Canada. He graduated in May 1979 with a Bachelor's Degree (Honours) in History. Major Stouffer was employed in the military as an Air Force Transportation Officer and specialized in tactical and strategic air lift operations. He is a qualified C130 Hercules Loadmaster. Over the course of his career, Major Stouffer filled a number of command and staff positions within Air Command and National Defence Headquarters. His last tour in Ottawa was as a member of the ill-fated Strategic Airlift Project Office that was to select a new strategic transport aircraft for the Canadian Forces.

In May 2000, Major Stouffer received his Master's Degree in War Studies from the Royal Military College (RMC). In September 2002 he enrolled as a full-time PhD student in the same programme at RMC. His three areas of academic study include air power, Canadian defence policy and Canadian history. Major Stouffer successfully defended his PhD Thesis on January 28, 2005 and was awarded a Doctorate of Philosophy (War Studies) at the spring Convocation on May 20, 2005. He is currently employed as an Assistant Professor in the Department of History at RMC.

Major Stouffer is married and has two children, Kimberley, aged 23, and Alexander, aged 18. Major Stouffer's family lives in Orleans, Ontario.

Air Power Writ Canadian

Randall Wakelam

Reprint from Sic Itur Ad Astra: Canadian Aerospace Power Studies Volume 3 - Combat if Necessary, but not Necessarily Combat 2011

This paper is based on a lecture given by Dr. Allan English to the Joint Command and Staff Programme (the Staff College course) at the Canadian Forces College in 2008. I used his slides as the basis of my own version of the lecture in 2009, and subsequently as the basis of the talk from which this paper was derived. Dr. English's presentation had an intentional link to doctrine; I have taken the approach of speculating about what major trends Canadian air power has developed or internalized over the past century. For the period up to 1945, the details to which I refer are well discussed in the three volumes of the official history of the RCAF. Regrettably, there is no post-war official history, although one is talked about. In lieu of this, several authors have offered popular histories of some of the events from the first decades of the cold war, but for the major trends in this period I have drawn from my own research. In a similar vein, regarding the decisions and events post-1975, I have made use of my own memory and experience. As a result, what follows is to some extent an opinion/editorial approach, making mention of a number of events and persons but not citing particular sources.

As air forces approach their centenaries we are often wont to conclude that air services were designed from the outset to be war-fighting services, whether as arms of the older armies and navies of their nations, or as the concepts and capabilities of air power matured, independent services in their own right. Perhaps some of that thinking is shaped by our tendency to interchange terms like air force, air service, air power, and air warfare. While the armies and navies of the world can rely on a fair degree of longevity in how they are viewed and in how they view themselves conceptually, air power thinkers are still sorting out the lexicon and what it means. We are not even sure what to call ourselves: are we air men and air women, aircrew and ground crew, or something else? While anyone in an army uniform, from the infanteer to the postal clerk to the dentist is a soldier, and anyone serving in a ship regardless of duties is deemed a sailor, those of us in uniform who work around air power are not always sure what we can safely call ourselves. For the purposes of this paper, I'll use the term aviator.

If, then, we are talking about air power and aviators in Canada, what can we say about these men and women and how they shaped the concepts, doctrines, and capability of a Canadian air force? Perhaps as importantly, were there external factors which caused them to move in certain directions, to adopt unique perspectives on air power, and ultimately to shape a Canadian air power culture? My thinking is that there were such national drivers, and that while not necessarily vastly different from other nations' air power interpretations, there is an identifiable Canadian slant.

The paper that follows looks at what could be seen as a number of seminal events, and myths, too, in the evolution of a national air power paradigm. Some are of short duration, but lasting impact, while others describe relatively long and stable periods where the aviation culture of the nation, and usually of the air service, was fairly firmly moulded.

The first of the seminal events was the Great War. For Canadian aviators this was a brief period during which national heroes were made, when a myth was born. Bishop, Barker, and Collishaw were well-known names; and, of course, who could forget Roy Brown, who was thought to have brought down the Red Baron? Whether he did or did not, he was simply one of a number of aces whose exploits, when taken together, were sufficient to show the Canadian people that while their army might have forged a national identity at Vimy Ridge, actions in the air were evidence of an important air spirit. At the same time, however, it was not insignificant that while the units of the Canadian Militia (as it was then termed) served together in a strong and powerful Canadian Corps, aviators were absorbed on an individual basis into the Royal Naval Air Service, the Royal Flying Corps, and, ultimately, after its establishment on 1 April 1918, the Royal Air Force (RAF).

Indeed, while Sam Hughes, Minister of Militia in 1914, had created a Canadian Aviation Corps (of one airplane and three aviators), this organization had not lasted longer than the time needed to ship the aircraft to Britain, and in so doing, damage it beyond repair. A second attempt to form a national air force had had to wait over four years, and when two squadrons were established in late 1918, this effort served only as a denouement as the war ended and massive demobilization followed. There was a bit of a subtext in these valiant but vain attempts to establish a Canadian military aviation capacity: in both 1914 and 1918, the aircraft to be used would be acquired from foreign nations despite the fact that it was the Canadian designed and built Silver Dart which was the first aircraft to fly in the British Empire in 1909, and that by the end of the war there was a manufacturing capability in the heart of the Dominion.

That particular capability was not, however, for the production of combat aircraft but rather for the fabrication of trainers, aircraft used in Canada by the British air services for the training of imperial aviators. In this it has been argued that Canada made a significant contribution to the war effort not unlike the manufacture of munitions, ships and other war materiel, and the production of foodstuffs needed by Britain to sustain its population.

The domestic contributions to air power—training and aircraft manufacture—would, in the long run, not be forgotten. Nor would be the brave accomplishments of the aviators. These air power activities were to persist.

But even with these themes established, they would not necessarily advance with equal force and importance through the following decades. With the world at peace, but the major air power themes clearly related to the military necessities of the previous years, it was hard to see just where an air service was needed in peacetime Canada; even during the war there had been little need for a Canadian-based combat capability with the exception of some patrols along the East Coast to keep watch for submarines and other German raiders. What now would be the utility of aviation?

The answer was to come from two unlikely gentlemen. They were unlikely only in the sense that they were not themselves aviators by training or employment, but they most certainly understood why and how a nation, and particularly its parliamentarians, might view the issues. The two were Major-General Willoughby Gwatkin, formerly the Chief of the General Staff, and Mr. John Wilson, late of the Naval Board. Both could see that the best and perhaps only way to maintain some form of air capability for the national government was to present to Canadians not the warfighting capabilities—which, if the hopes of the citizenry were to be fulfilled, the Treaty of Versailles and the nascent League of Nations would render superfluous—but rather as a national capability which could provide services which no other technology or agency could even attempt. A cross-country adventure to demonstrate that aircraft could traverse the Dominion rapidly and efficiently was soon mounted, and within a few years the Canadian Air Force, though small in numbers, did at least exist and was providing a range of support that would not have been possible otherwise: forestry patrols, anti-drug interdiction, et cetera.

How this service would be provided was somewhat uncertain. Could it be done by a civilian authority—an Air Board—or would it be best delivered by a military service? After some debate and false starts, a Canadian Air Force and ultimately a Royal Canadian Air Force (RCAF) was formed, the latter being established on 1 April 1924, largely to provide support to other government departments. Organizationally, the RCAF was to be a subordinate element within the Ministry of Militia until 1937.

There was in reality no need for a combat-oriented air arm and so buying and operating combat aircraft was not a priority. Instead, the RCAF took on much of the "bush flying" that came with opening the North, providing medical evacuations, conducting forestry and forest fire patrols and the like. The strength of the RCAF never exceeded a few hundred aviators. The implications for the purchase and operation of combat aircraft, let alone large numbers of aircraft of any sort, were self evident. The Air Force would buy a few utility aircraft with whatever money

could be scraped together towards the end of each fiscal year. For manufacturers, this was better than the situation immediately after the war when there had been a virtual freeze on aircraft acquisition; the option in 1919 to use surplus war stocks was both cheap and logical. By the mid-1920s, there seemed to be enough sales to support small but viable operations both in Montreal at Hawker Siddley and in Toronto at de Havilland. Moreover, while not large by the standards of some other nations, Canada was also seeing research and development initiatives leading to, among other things, a variable pitch propeller.

Certainly, during the 1920s, decisions and actions in Canada seemed, for the purposes of defining its air power requirements, that in the glow of peace even a prosperous and growing dominion could make do with a civil-oriented form of air power. While officially there was an air "force," its functions were virtually all non- or a-military. The situation was not to change appreciably in the first years of the 1930s when arguably there were much more important problems for Canada and the world to solve. What the situation might have been had proponents of air power pushed for a military service is impossible to know. In some other nations, and notably in the United Kingdom (UK) and the United States (US), a third service had been created and championed, either as an independent air force or as a strong air service, but whether this would have been appropriate for Canada seems doubtful. In both of the former cases, those services found work in colonial actions the like of which were not part of the Canadian experience. Gwatkin and Wilson had apparently found the appropriate approach for Canada.

By the latter part of the 1930s, the possibility of another major European war seemed likely, and this concern provided the catalyst for politicians and service leaders to begin thinking about reforming and expanding military capability. While after 1937 the RCAF had become a fully separate service with its own Chief of the Air Staff, there was little capability that it could offer. After two decades of what was effectively civilian flying, and with an industry that was not deemed capable of producing the complex combat aircraft of the period, there was little that the RCAF had to offer, compared to British and French air arms, when Canada declared war on 10 September 1939.

At the same time, however, the Prime Minister, William Lyon Mackenzie King, had, during the debates around defence build-ups, begun to push for a major role for an air force. This was not because King was a strong proponent of air power, but rather because it would allow Canada to make a significant contribution to the war effort less costly in lives than a large army contingent caught in the attrition land warfare. In King's view, he could send aircraft and aviators to Europe, and these, recreating the accomplishments of the Billy Bishops of the Great War, would satisfy the electorate that Canada was pulling its weight. This strategy was foremost in King's thinking during Imperial Defence conferences in the period before the war. But a related opportunity also played out brilliantly, from King's perspective, when the British sought to re-establish a training system in Canada. The Empire Air Training Plan, more commonly known in Canada as the British Commonwealth Air Training Plan (BCATP), would allow Canada to help win the war without putting the many Canadians employed by the BCATP, both in and out of uniform, at risk. Moreover, Canada was quite capable of manufacturing the small and relatively straightforward training aircraft that would be needed, and this production would mean jobs and profits for Canadians.

This training stratagem might have been the ideal scenario for Prime Minister King, but young Canadians did remember the heroism of the aviators and did themselves want to fly for the nation in the defence of their freedoms and values, and so there was a buildup of the RCAF. New units and commands were established in Canada, with Eastern Air Command playing an important role in anti-submarine warfare throughout Atlantic Canada and even as far afield as Iceland. But it was in England that the bulk of the wartime RCAF would serve. Unlike the experience of the Great War, where Canadians served as individuals within the British air services, now there was a concerted effort to have as many Canadians as possible assigned to UK-based RCAF squadrons. This was not something that the RAF was particularly keen on, any

more than the British Army had sought a Canadian Army which served in combination with the British service, but the tradition and mythology of the Canadian Corps of 1914–1918 was very much in the thinking of the Canadian government and people.

By the end of the war, aviators were to be found in Canadian units as well as throughout the RAF, in Canada as well as in the UK, the Mediterranean and the Far East, with squadrons in all operational commands. In addition, there were Canadian groups in Bomber Command and (in fact if not in name) Fighter Command, the latter as part of the expeditionary air forces established for the invasion of Europe in 1944. Over and above this effort, Canada had established and run the BCATP. At the strategic level, the RCAF was thus operating a vastly more complex organization than had been the case even in 1939. At the tactical level, commanders and aviators generally were proving their mettle on a daily basis; indeed, by the end of the war, No. 6 Group in Bomber Command had outstripped most of its sister organizations despite a number of teething problems and limitations, including second-string aircraft, resulting from its late inception in 1943.

Aircraft production to support Canadian aviators was an issue throughout the war. While the training types needed for the BCATP came off the production lines with great success, operational aircraft for units in both Canada and the overseas squadrons were assigned by the Allied Munitions Advisory Board, which decided the priorities of all national materiel. Thus, RCAF squadrons in need of fighters in 1942 could not take delivery of licence-built Hawker Hurricane fighters being produced in Fort William, Ontario. There were problems, too, when manufacturers attempted to convert British technical requirements to North American standards and products. But this being said, by the end of the war more than 1,000 Lancaster bombers had been built from blueprint in Canada. A total of some 16,000 aircraft came off Canadian production lines, but oddly, no engines were built in the Dominion.

If one were to take a still photo of Canadian air power in the summer of 1945, it would look very military indeed. Supported by a unique training organization and indirectly by a considerable production capability, the RCAF had grown into a multi-dimensional air force, the fourth largest among the allies. But would that picture be accurate in the peace that followed?

Certainly, the RCAF peacetime structure approved by the end of 1945 was, on the face of it, highly different from what had been an air power empire just six months earlier. The government of Mackenzie King had allowed an air force of just eight regular squadrons plus a handful of reserve units. As in 1919, surplus wartime aircraft were to be the norm, and only a few of those in most cases. The total strength of the RCAF would be just 15,000. This was not the civilian aviation formula of the 1920s, but it was an air force in not much more than name, or so it seemed.

In fact, a number of things were different. First, the air marshals had learned from the experience of the past 25 years that having a national manufacturing capability was essential, but not just any aircraft should be coming off the line. While in discussions during 1944–45, the government had pushed for a transport type that could be used in the North and for trans-Canada movements, both military and civilian. In the end, there had been agreement to continue with the development of an indigenous fighter design. Not only was the groundwork laid for the design and development of the AVRO CF100, but also for a Canadian designed and built jet engine, the AVRO Orenda. While neither of these was approved for mass production in the years immediately after the war, both of them would be available as the cold war evolved into a very unpleasant warmness with the outbreak of the Korean War in 1950.

By that time, another new entry into the aircraft sector, Canadair Limited of Montreal had cornered the world market on DC3 Dakota refurbishment, while also introducing a line of DC4 (C54) transports under the name North Star. These aircraft would be used by the RCAF as part of the air bridge to the Far East. AVRO, too, had started in the commercial sector by repurposing wartime aircraft but had quickly moved on to a jet transport, the AVRO Jetliner, which flew only

weeks after the world's first jet transport the deHavilland Comet. The prospects for the Jetliner looked good, except that AVRO did not have the capacity to advance all of its projects in parallel, and as the international situation worsened, and Canada needed all its aircraft and engine production for military needs, the Jetliner disappeared from view.

By 1950, the RCAF had redesigned its force structure a number of times. There was a need not just to expand capabilities for a possible European war, but also to coordinate with the US Air Force for the defence of North America. The staffs at Air Force headquarters (AFHQ) developed a complex plan which would see an air division of 12 squadrons in Europe, equipped initially with Canadair licence-built F86 Sabres (and powered by Canadian Orenda engines), and, subsequently, with all-weather CF100s. These same CF100s, with their long-range, twinengine performance, and all-weather capability, would also be the fighter of choice for North American air defence. At the same time, it was apparent that Canada's training expertise would once again be needed to assist in the training of NATO aviators. By 1954, the RCAF was spending half of the defence budget.

A number of themes had thus come together to give Canada a unique air power capability: a solid domestic production capability of world class aircraft; an effective civil aviation sector; an air force that had the institutional experience for running complicated and demanding programmes; the tactical proficiency to operate at a level on par with its allies; and, the vision to get ahead of or at least keep up with complex and ambiguous world circumstances.

But these circumstances were not fixed and by the end of the 1950s the air force and air power in Canada had experienced correction; in effect, the throttles had been pulled back. The threat situation had evolved, as had technology, and the government had changed. The follow-on aircraft to the CF100, the fabled CF105 Arrow, was neither needed nor affordable in the fiscal and defence climate of the time, particularly when the threat was now from intercontinental missiles rather than bombers, which the Arrow was designed to protect against. These changed circumstances and policies affected all three services, but the Air Force had the farthest to fall, as it were. As the 1960s became the 1970s, the need for major forces in Europe waned and the Air Division slowly atrophied into an air group of three under-strength squadrons. Air defence at home continued to be a necessity, but there, as in Europe, the aircraft were not top of the line. While the fighters of both roles were replaced with the then new CF18 in the early 1980s, the dominant roles and character of air power in Canada were set for another change.

With the end of the cold war, a situation not unlike that of 1919 and 1945 seemed about to unfold, with what is now called a peace dividend ready to be cashed not only by Canada, but also by NATO governments generally. And indeed, in terms of the need to maintain standing forces ready to deal with political opponents, the circumstances were just so. However, the relative stability of the cold war was quickly replaced with the relative instability of the post-cold war period. Air power now took on other forms, and capabilities previously embedded within the Army in the case of tactical helicopters and strategic and tactical transport now became the most often used forms of air power outside the country, and in their capacities for search and rescue these same air communities did yeoman work inside Canada's boundaries as well. This new prominence was actually nothing new for the air transport function, which, thanks to a number of Canadian designed and produced short take-off and landing (STOL) aircraft, had been involved in UN operations since the 1960s. In the case of the land aviation squadron, their involvement in humanitarian, peace keeping, and peace support missions began in earnest in 1985 with the attachment of a Rotary Wing Aviation Unit to the Multinational Force in the Sinai. Significantly, these aircraft, too, with the introduction of the Bell 412 Griffon in the mid-1990s, were Canadian built.

While these two aviation communities have been in the forefront, this should not lead one to conclude that there was no activity in fighter or maritime functions. Both have transformed to the times, using foresight and intellect to adapt technology and practices to current security needs.

As Canada prepares to celebrate 100 years of military aviation, we thus have to ask ourselves what sort of military aviation we will be needing. While there is a clear warfighting heritage and culture, there is also apparently much more. The RCAF was born of a campaign to show Canadians that an air service is not only a warfighting service, but one which could serve other security-related needs in the broadest sense, whether supporting other government departments, as has been the case since the first counter-drug operations in the 1920s, or conducting contemporary humanitarian and peace support operations in Canada and around the globe. This ability to undertake such a broad range of activities could easily be explained by the notion of airpower's flexibility, but that arguably refers to tactical activities. The kind of flexibility that the Canadian air services have exhibited, both from the perspective of the leaders and the adaptability of the organization and the vision of the leaders, speaks to a much more important flexibility of the mind. In Canada, then, air power really does seem to be writ large.

But if there is a Canadian conception of air power, then we might want to ask, in the army fashion: so what? As suggested immediately above, Canadian aviators have demonstrated that they are able to adapt to a range of static imperatives and tactical necessities. While these concerns might have been adequate for the 20th century, they have been arguably less important in the complexity and ambiguity of the early years of the current century. There is little question that aviators need to recognize that they come from a cultural history where individual aviators and squadrons have excelled in combat and on operations, but they must equally recognize the necessity of continuing to think beyond purely tactical and technical matters in the contemporary security climate. In short, we have developed a particular conception of air power; we need to know how that conception came to be, and why it is important to maintain and develop the institutional nimbleness that has helped Canadian air power to survive and evolve.

Is this a finite task? Have we reached a stable conception? Clearly not. On top of everything else, the air forces of Canada have demonstrated, perhaps implicitly or even unintentionally, that they have been and need to be learning organizations. Aviation is too young a profession to be able to fall back on centuries of culture and custom. As we make our own way we must think hard about the decisions that have been made along the way and if and how those decisions and their outcomes will help us through our second century. \odot

Randall Wakelam

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