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**ALTERNATE STRATEGIC VECTORS FOR
CANADA'S AIR FORCE**

by/par

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ABSTRACT

At the time of writing, Canada's Air Force is still struggling to formally come to grips with its own future posture. A draft primer on the value of Canada's Air Force entitled *Canada's Air Force – A Vital National Security Institution* has been written. Another draft known as *Strategic Vectors* is both a vision and transformation document while the draft *Aerospace Capability Framework* document provides the strategic plan for the transformation of Canada's Air Force in the 21st Century. While these drafts have now each been revised on several occasions, they are still pending formal approval.

Unfortunately, suitable resources and an effective process did not support the creation of this draft documentation in order to ensure a coordinated, integrated and consistent vision and plan for the future. A critical review of the overall process used for the current drafts for the Canada Air Force strategic vision and transformation plans suggests that both a new process approach and further revisions are needed. As the CF prepares to issue *Strategy 2025*, a key further question is whether the Air Force needs to adjust its own "vectors" in response.

In order to make significant progress, Canada's Air Force needs to establish a much more coherent approach to long range strategy planning. The Air Force needs to consider adopting a pragmatic version of the United States Air Force's approach to strategic planning with regular annual updates and with major cyclical reviews. With an improved process in place, it then needs define its future core operational and personnel competencies in more explicit terms. The Air Force's future values, missions and roles also need to be carefully articulated. Before any transformation plan can be fully fleshed out, the basic elements of the underlying strategies need to be carefully considered and further detailed.

ALTERNATE STRATEGIC VECTORS FOR CANADA'S AIR FORCE

National safety would be endangered by an Air Force whose doctrine and techniques are tied solely on the equipment and process of the moment. Present equipment is but a step in progress, and any Air Force which does not keep its doctrine ahead of its equipment, and its vision far into the future, can only delude the nation into a false sense of security. – General Henry H ‘Hap’ Arnold, USAAF, 1945¹

BACKGROUND

The Canadian Forces (CF) is facing an extremely difficult period as it attempts to grapple with future strategies. The CF is currently in the process of preparing *Strategy 2025*, an update of the previous *Shaping the Future of Canadian Defence: A Strategy for 2020* document (more commonly abbreviated to *Strategy 2020*). The original *Strategy 2020* document (created in 1999) was an attempt by the senior leadership team to create a strategic framework for defence planning and decision making to help guide the institution into the next century. The strategy identified both long-term objectives and short-term goals for the CF.² However, a more recent study by the respected Defence Management Studies Program at Queens University has concluded that Canada's future force faces critical challenges in the key areas of equipment, human resources and supporting elements which could effectively eliminate the CF as a viable operational force.³ A key unanswered question is to what degree *Strategy 2025* will amend the previous version.

Subsequent to the issuing of the original *Strategy 2020*, specific elements within the CF began to issue their own strategic analyses in response to the departmental initiative. In June 2001, the Navy was the first to formally publish a comprehensive strategy entitled *Leadmark: The Navy's Strategy for 2020*.⁴ The Army followed in May 2002 with a more succinct official strategy of its own known as *Advancing With Purpose – The Army Strategy*.⁵

By contrast, at the time of writing, Canada's Air Force is still struggling to formally come to grips with its own future posture. A draft primer on the value of Canada's Air Force entitled *Canada's Air Force – A Vital National Security Institution*⁶

¹ Australia, Royal Australian Air Force, *AAP1000 – Fundamentals of Australian Aerospace Power – Fourth Edition*, Aerospace Centre, RAAF Base Fairburn, ACT, Aug 2002, 275.

² Canada, Department of National Defence, *Shaping the Future of Canadian Defence: A Strategy for 2020*, (Ottawa: Department of National Defence, June 1999), i.

³ Bland, D.L, MacDonald, B., Ankerson, C., and Marsh, H., *The Claxton Papers*, Queens University Defence Management Studies Program, Kingston, Ontario, Canada, 2003, xii.

⁴ Canada, Department of National Defence, *Leadmark: The Navy's Strategy for 2020* (Ottawa: Department of National Defence, June 2001).

⁵ Canada, Department of National Defence, *Advancing with Purpose: The Army Strategy* (Ottawa: Department of National Defence, May 2002).

⁶ Canada, Department of National Defence. *Canada's Air Force – A Vital National Security Institution (Draft 24 Jun 2003)*. (Ottawa: Department of National Defence, Chief of the Air Staff, 2003).

has been written. A draft known as *Strategic Vectors*⁷ is both a vision and transformation document while the draft *Aerospace Capability Framework*⁸ document provides the strategic plan for the transformation of Canada’s Air Force in the 21st Century. Figure 1.0 illustrates the overall hierarchy and inter-relationship of these documents. While these drafts have now each been revised on several occasions, they are still pending approval.

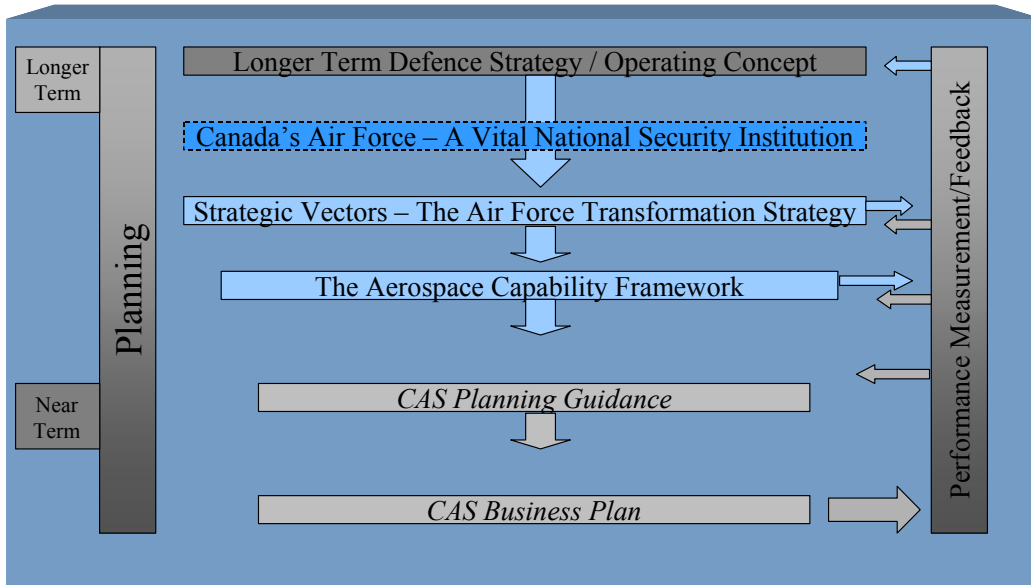


Figure 1.0 – Hierarchy of current Canadian Air Force Documentation⁹

Unfortunately, suitable resources and an effective process did not support the creation of this draft documentation in order to ensure a coordinated, integrated and consistent vision and plan for the future. As the CF prepares to issue *Strategy 2025*, a further key question is whether the Air Force needs to adjust its own “vectors” in response.

In order to make significant progress, Canada’s Air Force needs to establish a much more coherent approach to long range strategic planning. With an improved process in place, it then needs define its future core operational and personnel competencies in more explicit terms. The Air Force’s future values, missions and roles also need to be carefully articulated. Before any transformation plan can be fully fleshed out, the basic elements of the underlying strategies need to be carefully considered and further detailed.

⁷ Canada, Department of National Defence. *Strategic Vectors* (Draft 08 Mar 2004). (Ottawa: Department of National Defence, Chief of the Air Staff, 2004).

⁸ Canada, Department of National Defence. *Aerospace Capability Framework* (Draft 6 August 2003). (Ottawa: Department of National Defence, Chief of the Air Staff, 2003).

⁹ Canada, Department of National Defence. *Aerospace Capability Framework...*, 2.

The body of this paper therefore has a discussion framework consisting of seven major parts, following the thesis. The first part of this framework will examine both external and internal examples of the strategic planning process. The second part will then review pertinent definitions and a hierarchy of documentation. The next three parts will separately examine both current and historical Canadian Air Force visions, strategies and transformation strategies. Prior to the conclusion and recommendations, in the final two parts, the author will then suggest some additional considerations for the future aerospace force and its current strategic vectors.

THESIS

Canada's Air Force now has the draft documentation required for a vision and strategic framework. A critical review of the overall process used for the current drafts for the Canadian Air Force strategic analysis, vision and transformation plans suggests that both a new process approach and further resources are needed. The Air Force needs to consider adopting a pragmatic version of the United States Air Force's approach to strategic planning with regular annual updates and with major cyclical reviews.

PROCESS

In the creation of *Strategy 2020*, the CF appears to have essentially followed similar United States *Joint Vision 2010* documentation, which had been initially created in 1995.¹⁰ Perhaps, not surprisingly, Canada's Air Force historical and current strategic visioning documentation also appears to mirror similar documents created in the United States Air Force's (USAF) strategic planning process. It is therefore instructive to first examine the overall strategic planning process used in the USAF.

The United States Air Force Strategic Planning Process. "Since the mid-1990s, the United States Air Force has systematically engaged in a range of activities intended to shape its strategic planning to reflect its envisioned future."¹¹

At the outset of the 1990s, the USAF had published a strategic vision document known as *Global Reach – Global Power*. This document was initially prepared in the 1989-90 timeframe, just as the Cold War was coming to an end.¹² *Global Reach – Global Power* argued that the emerging United States national security strategy placed a high premium on airpower's distinctive qualities of speed, range and flexibility. It further suggested that the USAF was capable of projecting dominating power to any point on Earth in hours rather than the days, weeks or months required to move ships or ground forces into position. The clear implication was that the USAF would make a significant contribution to future military campaigns.¹³

¹⁰ This US documentation has now been superseded by an updated Joint Vision 2020 paper. United States Department of Defense, Chairman of the Joint Chiefs of Staff, *Joint Vision 2020* (Washington DC: US Government Printing Office, June 2000).

¹¹ Barzelay, Michael and Campbell, Colin. *Preparing For The Future – Strategic Planning In The U.S. Air Force*, (Washington: Brookings Institution Press, 2003), 1.

¹² *Ibid*, 27.

¹³ *Ibid*, 28.

The development of *Global Reach – Global Power* had a significant impact on USAF strategic thinking and particularly on Air Force Chief of Staff, General R. Fogleman, who had been appointed to his position after its publication. It set the standard for Air Force long-range planning and General Fogleman therefore sought to improve on this strategic vision, rather than to supplant it.¹⁴ But while this strategic vision document had set a standard, it had also created significant inter-service tensions along with internal USAF issues.

Global Reach – Global Power was a top inner-circle piece of paper...Many people inside and outside the Air Force thought *Global Reach – Global Power* was a slogan rather than a strategic vision and blueprint. They didn't take the time to seriously read through it.¹⁵

Consequently, General Fogleman specifically sought to refine the process involved in further developing the strategic vision. This revised process of strategic planning began simply with the identification of issues. This methodical approach was in marked contrast to earlier planning efforts, which had usually focussed on the development of technical systems, which were mostly concerned with military operational issues, research and development, etc. and which had downplayed other less technical issues such as knowledge, skills, values. The new focus was instead on service capabilities required for the future and, eventually, 16 broad issues were identified in areas such as integrating air and space, future space operations, battle management and command-and-control operations, unmanned aerial vehicles and career patterns.¹⁶

General Fogleman used two specific principles in the development of this revised approach to strategic visioning and long-range planning. The first principle was the necessity to secure collective “buy-in” support for the new strategic vision especially since *Global Reach – Global Power* had been created in a relatively high level “invisible” process. For General Fogleman “buy-in” meant that the new vision had to represent an Air Force view and not just his personal opinion. From his perspective, the Air Force’s senior leadership needed to lend their support to the initiative and also had to believe in it in order to “sell it to the troops.” The overall benefits from the revised process were seen as clearly connecting strategic vision to long-range planning, institutionalizing long-range planning as an Air Force process, overcoming cultural divides within the Air Force, and strengthening the Air Force’s hand in the defence policy making process.¹⁷

To achieve “buy-in” at the executive level, in 1996 General Fogleman mandated that one of the upcoming meetings of the USAF four-star generals and civilian equivalents be assigned to the effort. The conference was extended from a standard three days to five days and the entire agenda was devoted to visioning and long-range planning. Moreover, more than six months prior to the conference, a Long-Range Planning Board of Directors was charged with preparing the detail background and agenda for the conference including various analyses and 16 issue papers. This high-

¹⁴ *Ibid*, 29.

¹⁵ *Ibid*, 29.

¹⁶ *Ibid*, 5.

¹⁷ *Ibid*, 43.

level working group included nine three-star generals, key staff appointees working for the chief of staff, and civilian-equivalents working for the secretary of the Air Force. The chairman for this group was the four-star vice chief of staff.¹⁸

The second principle used to formulate the strategic vision and long-range plan was a technique eventually dubbed “backcasting from the future”. Rather than forecasting from the present, this principle called for first formulating an agreed point of view about the future. Using this future point of view, the participants would then look back from that point to determine pivotal events and issues. A thirty-year time horizon¹⁹ was eventually chosen as a reference point and a study of “alternative futures” for the year 2025 was then commissioned from the USAF’s Air University. Known simply as *2025*, the resulting study assessed the concepts, capabilities, and technologies required for the USAF to remain the dominant air and space force in the future. Ultimately the study involved more than 200 direct participants including students and faculty from the Air War College, the Air Command and Staff College, USAF Academy cadets, 70 guest speakers, groups of outside advisors, consultants, and various retired generals along with more than 2,000 contributors to internet dialogue sites.²⁰ Simultaneously, the Air Force Scientific Advisory Board, which consisted of 50 members, had prepared a comprehensive assessment of the technologies required for the 21st century.²¹

The culmination of all this activity was the five-day conference in October 1996 at the Air Force Academy in Colorado attended by the USAF four-star generals, the department’s civilian leadership, the board of directors and various staff officers. The conference included two types of sessions. The first kinds of sessions were round-table discussions on various thematic issues (including space and core competencies such as air and space superiority, global mobility, global attack, information dominance and agile combat support) that were to be addressed in a strategic vision document entitled *Global Engagement*. The second type of sessions was oriented towards writing the long-range plan. These latter sessions focussed on the 16 issue papers (grouped into functional categories) with a specific aim to consider the options presented therein and to achieve consensus on the future. This consensus was to be expressed as directive statements concerning each of the 16 issues.²²

After the conference, a new Strategic Planning Directorate was established in January 1997 to help coordinate the follow-on efforts specifically in the area of long-range planning. The long-range plan, which was subsequently developed, identified

¹⁸ *Ibid*, 44.

¹⁹ Gen Fogleman chose 30 years for a variety of reasons: it was well beyond the USAF’s normal 7-year planning cycle; it would require participants to think beyond their personal experiences (i.e. beyond a normal career) and beyond internal institutional loyalties; and it avoided the temptation of forecasting to a more immediate future. He subsequently had doubts, however, as to the timeframe chosen when some participants were talking too far into the future in terms of available technology. *Ibid*, 45.

²⁰ United States, United States Air Force. *2025 Executive Summary*. 2025 Support Office, Maxwell Air Force Base, Alabama, Air University Press, August 1996, 4.

²¹ United States, United States Air Force. *New World Vistas – Air and Space Power for the 21st Century*, Air War College, Maxwell Air Force Base, Alabama, December 1995, 4.

²² Barzelay, Michael and Campbell, Colin. *Preparing For The Future...*, 55.

42 end-states, which specified the operational or support capabilities necessary for fulfilling the goals of each of the 16 directive statements.²³

The long-range plan was then further refined into individual thrust-area transformation plans. These transformation plans were intended to identify the programmatic investments necessary to ensure that the core competencies specified for the future could be realized.

General Fogleman retired in 1997 to be replaced by General M. Ryan. General Ryan's approach to strategic visioning and long-range planning was somewhat different than his predecessor's. While General Ryan continued the basic process and retained the approach and organizational structure previously created, he was skeptical of projecting so far into the future; he considered 25 or 30 years into the future to be too much of a stretch. He consequently brought an element of pragmatism to both visioning and planning. "He believed that the adaptations of programmatic commitments to future challenge would have to strike a balance between evolutionary and revolutionary approaches."²⁴

What also became clearly apparent, during General Ryan's tenure was the difficulty of consistently devoting the staff time, energy and effort required for visioning and long-range planning. Additionally, the challenge of matching the vision and long-range plans to the existing budgetary constraints was daunting. Not surprisingly, after considerable staff effort, they concluded that existing resource baselines projected out to 2020 would not be able to achieve a balanced, globally deployable force in the future without significant tradeoffs and divestiture of programs in the nearer term.²⁵

The subsequent visioning process wrestled with three persistent issues: how to go about reconfiguring programmatic commitments and resources to coincide with future intent; how to gain the resources for future programs while keeping existing personnel and equipment from breaking down under the punishing tempo of real-world operations; and, how to rationalize and coordinate the often divergent demands of air and space requirements within the USAF.²⁶

Consequently, under General Ryan's pragmatic influence, the USAF reverted to a tactic described as "guided incrementalism". For example, the revised vision statement, issued in June 2000, identified critical capabilities that the USAF believed it must develop and introduce into service by the year 2020. Given the difficulty of matching budgetary resource commitments to long range plans, the service has chosen instead to selectively advance strategic choices when the opportunities and funding present themselves. In short, the USAF has now presented a broad outline of where it wants to be in twenty years and is moving slowly to posture itself over that same time frame.²⁷

²³ *Ibid*, 75.

²⁴ *Ibid*, 84.

²⁵ *Ibid*, 92.

²⁶ *Ibid*, 3.

²⁷ *Ibid*, 93.

An insightful critical review and analysis of this entire period and processes can be found in the book entitled *Preparing for the Future – Strategic Planning in the U.S. Air Force* by M. Barzelay and C. Campbell. In their analysis, Barzelay and Campbell concluded that what was achieved was not so much of a strategic vision and long-range plan but rather a declaration of strategic intent.²⁸ They also noted significant problems and issues throughout the entire timeframe, some of which remain unresolved. Most importantly, they analyzed the requirements for effective visioning and identified and compared the processes used by the various Chiefs of Staff.

Their definition and categorization of strategic visioning is as follows:

The proximate aim of any given round of strategic visioning is to improve the organization's strategic intent. Strategic intent is a committed interpretation, shared by the organization's leaders, of how the organization's capabilities should evolve so as to remain effective in performing future tasks. Such organizational tasks will be shaped by imperfectly foreseeable changes in both policy objectives and the circumstances of implementation. As a committed interpretation, strategic intent is not a plan or necessarily a set of authoritative, formal decisions. Rather it represents a policy or institutional argument about how a particular organization seeks to create public value over the long run. A round of strategic visioning is effective when the outcome is a plausible argument – well-rehearsed and internally endorsed – on how the organization's envisioned evolution will contribute satisfactory government performance in the relatively distant future.²⁹

In particular, although primarily for the Fogleman round but also for the Ryan round of strategic visioning, Barzelay and Campbell were able to discern key component functions and six process design features critical to the overall success of effort. They were also able to identify the accompanying process contextual factors.

The component functions within strategic visioning may simply be described as: organizing the participation; making sense of the future; conceiving the strategic intent; agreeing on that strategic intent; and finally, declaring the strategic intent.³⁰

The six process design features³¹ included:

an explicit conceptual approach to strategic visioning including the principles of collective “buy-in” and “backcasting” from the future;

a long-range planning board of directors including a phased development of the group to distribute and coordinate workload and collectively present results;

supporting project research and analyses (contributing organizations included the RAND Corporation's Project Air Force, the Air University, the Air Force Studies and Analysis Agency along with various defence contractors);

²⁸ *Ibid*, 179.

²⁹ *Ibid*, 96.

³⁰ *Ibid*, 108.

³¹ *Ibid*, 103-104.

the Chief of Staff's personal involvement in the overall activities;

a culminating event / conference to help focus efforts and marshal collective support; and

the wide dissemination of the strategic vision through verbal and written presentations.³²

The process contextual factors involved included the organizational constitution, the organizational cultural bias, an installed base of strategic thinking and the policy subsystem. Organizational constitution involves the central characteristics of the organization; in the case of the USAF, this includes the split of responsibilities between the Chief of Staff and the civilian secretary of the Air Force. Cultural bias involves the bureaucratic nature of the organization. An installed base of strategic thinking involved the underlying Air Force doctrine and the organizational impact of the original *Global Reach – Global Power* vision. The policy sub-system context involves the policy setting mechanism within which the USAF functions. For example, among other influences, military services compete for mission responsibilities and funding. The national security context also influences the environment.³³

The Barzelay and Campbell study also concluded that there are also four key leverage points for connecting the various elements in preparing for the future. First, strategic visioning entails the attainment of policy foresight and decisions relating to strategic intent (leverage point one). A vision that does not lead to a new strategic intent will have little organizational effect, whereas a revised strategy not firmly rooted in foresight will prove to be visionary only through luck. Second, strategic planning and policy management must come together so that they attain a high degree of reciprocity. The strategic vision must link with both medium-term policy and expenditure planning (leverage point two) and human resources and organizational planning (leverage point three). Finally, the strategic planning and policy management actually position the organization to deal favourably with the future (leverage point four). In other words, the organization must actually follow through on its strategic visioning and planning to position itself optimally for the future.³⁴

The Canadian Air Force Strategic Planning Process. In Canada, the Air Force demonstrated a serious interest in strategic vision and long-range planning beginning in the mid-1980s. In June 1985, Air Command published a futures trend analysis known as *Project 2010 – A Flight Plan for the Future*. A review and update of this first trend analysis entitled *Loom of Light* was then issued in March 1990. These initial trend assessments, prompted the Commander of Air Command in March 1993 to initiate a long-term futures study of the requirements and capabilities for Canadian aerospace power 25+ years into the future. This study was given the title *Project 2020 –*

³² Note - the subsequent USAF strategic vision was widely published and distributed externally while the long-range plan circulated widely within the Air Force. It has also received regular updates.

³³ Barzelay, Michael and Campbell, Colin. *Preparing For The Future Force...*,104-105.

³⁴ *Ibid*, 214.

A Flight Plan for Change and it was conducted in three separate phases over a period of two years. Phase I³⁵ examined future trends in the world and identified factors on a global and national scale that would influence defence planning in 2020 and beyond. Phase II³⁶ identified the potential Air Force roles and missions within this future environment and sought to project the mission focus, design characteristics and team requirements for this future force. Finally, the Phase III³⁷ report was intended to outline the most favourable methods of transition from the existing 1995 organization and structure to the future model. In short, Phase III was to be the transformation plan document.³⁸

Two retired Air Force Generals guided the development of each of the three phases and the associated reports. Various internal working groups, staff officers, and consultants provided the input for the reports. The reports were distributed to groups and wings for further analysis and comment. The results were comprehensive and the findings and conclusions in many ways paralleled similar studies being initiated by the USAF in the 1995/96. Unfortunately, for Canada's Air Force, the issuance of these reports was coincidental with the release of the 1994 Defence White Paper followed by sweeping rounds of successive defence budget cuts. Consequently, as the Air Force struggled to deal with pressing current issues and significant downsizing brought on by fiscal deficits, any sustained interest in visioning, long range planning or transformation waned. The Phase III transformation plan was released as a discussion paper only and appears to have received only a cursory review.³⁹

From 1995 until the release of the Departmental *Strategy 2020* paper in 1999, there does not appear to have been any significant impetus for further Air Force strategic visioning or long range planning. In 2000, the Directorate of Air Strategic Planning eventually released a short discussion paper known as *Vectors 2020: A Canadian Air Force Discussion Paper*. This paper raised some fundamental questions as to the future of the Air Force including the question as to whether combined or joint capabilities should be emphasized if the Air Force could afford only one or the other. The joint option would have seen the Air Force increase its capabilities in support of maritime and land

³⁵ Canada, Department of National Defence. *Project 2020 – Flight Plan for Change - Phase I Report: Through the Looking Glass* (Winnipeg: Commander Air Command, February 1994).

³⁶ Canada, Department of National Defence. *Project 2020 – Flight Plan for Change - Phase II Report: Harness The Future* (Winnipeg: Commander Air Command, November 1994).

³⁷ Canada, Department of National Defence. *Project 2020 – Flight Plan for Change - Phase III Report: The Plan* (Winnipeg: Commander Air Command, July 1995).

³⁸ The aim of the Phase III report is described as detailing a force development plan through which the vision could be created. Canada, Department of National Defence. *Project 2020 – Flight Plan for Change – Phase I Report ...*, 1.

³⁹ The concluding paragraph in a review of the Phase III report by a Colonel in Fighter Group Headquarters in Sep 95 is illustrative of the response: "To truly criticize this document, one would first have to totally immerse himself in the thinking of this working group...this would be a major endeavour for which I currently do not have time for however important I feel it is." – Marcotte, Col J.P.B. *DO COMMENTS AIRCOM PROJECT 2020 PHASE III REPORT* (FG/CANRHQ North Bay, Memorandum G3185-2(DO) 24 Sep 95)

forces emphasizing capabilities such as strategic / tactical airlift, surveillance and reconnaissance while decreasing or eliminating capabilities in other areas.⁴⁰

Additional draft strategic papers finally followed in 2002 and 2003 spearheaded by the Director General Air Force Development (DG Air FD). The *Aerospace Capability Framework*, the draft strategic plan, and *Strategic Vectors*, the draft strategic vision and transformation strategy, were developed concurrently. A draft historical overview primer on the value of Canada's Air Force entitled *Canada's Air Force – A Vital National Security Institution* was subsequently written. The latter document was also intended to have a short executive summary pamphlet available for public consumption. Each of these draft documents has proceeded through two or three iterations. The draft documents were periodically distributed to various headquarters and the Air Force wings for review and comment. Air Force Generals were given brief progress updates on the documents as part of their normal twice-yearly meetings. Part of the reason for the long gestation period for these documents was most certainly the changeover between Lieutenant Generals Campbell and Pennie as Chief of the Air Staff (CAS) in the summer of 2003.⁴¹

Unfortunately, the various draft versions of these documents have met with considerable criticism and comment both from within the Air Force and the wider CF community. Particularly for *Strategic Vectors*, the various iterations have shown both minor and significant changes in content. Why then has the Air Force had so much difficulty in generating a strategic response to *Strategy 2020* and why has the Air Force lagged behind the Army and the Navy especially when its initial efforts at this task date back more than 20 years?

Process - Problems & Issues. There are two principal problems to this strategic planning difficulty, which are readily apparent, namely resources and overall methodology. Another, less apparent, issue is the current organizational construct of the Canadian Forces.

The problems of resources and process apply not only to strategic vision and planning but equally well to the issue of Air Force doctrine. It is in the examination of the doctrine process that part of the principal reasons for the Air Force difficulties can be seen. Unlike the USAF and other elements of the CF, the Canadian Air Force has struggled to support and update its doctrine. A study of the issues and problems therein was subsequently commissioned and its findings are revealing. Prior to 1997, the responsibility for aerospace doctrine was clearly vested in the Commander of Air Command. As the Air Force downsized and restructured, however, the resources devoted to the subject of doctrine dwindled. The direct involvement of Air Force personnel in support of internal doctrine development amounts to only 2 or 3 person years at best. Most personnel are involved only on a part-time basis and the existing doctrine is out of

⁴⁰ Canada, Department of National Defence. *Vectors 2020 – A Canadian Air Force Discussion Paper* (Ottawa, Directorate of Air Strategic Planning, 2000), 15.

⁴¹ This perspective on events is drawn from the author's involvement in reviews of the draft iterations while serving as Chief of Staff, Director General Aerospace Engineering and Program Management for the period 2001 to 2003.

date and not widely read in the Air Force community. Within the CAS staff, the mandate for the development of future aerospace concept of operations, strategic aerospace doctrine and future application of aerospace capabilities normally rested with the Directorate of Air Strategic Plans (D Air SP). Unfortunately, it must also be said that the overall responsibilities and resources within the CAS staff have changed repeatedly in the last five years and D Air SP has repeatedly been restructured, as has the entire staff. Similarly, the development of an Air Warfare Centre, also intended to foster development in each of these areas, has yet to be stood up⁴² and the appropriate personnel resources found.⁴³

By comparison, the Director of Army Doctrine (DAD) branch, a Colonel, has approximately 35 personnel comprised of eight functional development sections plus coordination staff. Additionally, there is a Directorate of Land Strategic Concepts (DLSC). Both of these directorates were originally supported and integrated into the Land Forces Doctrine and Training System.⁴⁴ In the Navy strategic planning and doctrine is led by a Director of Maritime Strategy, who is supported by the Commanding Officer of the Canadian Forces Maritime Warfare Centre (CFMWC). The CFMWC numbers approximately 65 personnel and has responsibility for operational doctrine. The Director of Maritime Strategy had the lead in the development of *Leadmark – The Navy’s Strategy for 2020*.⁴⁵

It is clear that both the Army and Navy have devoted considerable resources to the subjects of both doctrine and strategic planning. It is therefore perhaps not surprising that by drawing upon these resources that they have been able to generate strategic vision documents in timely manner after the release of *Strategy 2020*. Within the CAS organization, since the year 2000, only a few staff officers in concert with DG Air FD⁴⁶ have devoted their activities to Air Force strategic visioning and planning. By comparison, it is interesting to note that the earlier *Project 2020* Phase II report in 1994 alone involved two Brigadier Generals, six Colonels, two Lieutenant Colonels, five Majors and a variety of other specialist Air Force personnel. Ironically, more Air Force personnel have been directly or indirectly involved in the more recent Army and Navy doctrine and strategic planning efforts than in the Air Force’s internal efforts.⁴⁷

⁴² The formation of the Air Warfare Centre was finally approved in 2003.

⁴³ Canada, Department of National Defence. *Aerospace Doctrine Study – Final Report*. (Ottawa: Department of National Defence, Chief of the Air Staff, 30 April 2002), 1-38.

⁴⁴ *Ibid*, 19. Note – in 2003, overall responsibility for the Army force development was subsequently assigned to the Assistant Chief of Land Staff (ACLS). Reporting to ACLS is the Director General Land Combat Development (DGLCD) who now has DAD and DLSC reporting directly to him along with other pertinent positions. This change, although currently not formally documented, further reinforces and consolidates Army strategic planning.

⁴⁵ *Ibid*, 20-21.

⁴⁶ From the author’s personal experience, the current effort was largely a focus by DG Air FD personally with only a limited amount of input by other staffs during the review process, after the initial drafts had been produced.

⁴⁷ The Navy’s Maritime Warfare Centre is a joint mix of Air Force and Navy personnel with the Deputy Commanding Officer normally being an Air Force LCol. 1 Wing (tactical aviation) staff contribute to the Army processes. *Ibid*, 20-21.

In terms of process analysis, it is also useful to frame a review of the recent Canadian Air Force approach in terms of the successful process methodology identified by Barzelay and Campbell in their USAF study.

The component functions included: organizing the participation, making sense of the future, conceiving the strategic intent, agreeing on that strategic intent and declaring the strategic intent. From a Canadian Air Force perspective, while there have been attempts at organizing the participation and agreement on the strategic intent, there have been serious weaknesses throughout in comparison to the USAF efforts. Canadian Air Force participation has been very limited and conceiving the strategic intent has also been confined to a few players. Agreement on the drafts produced has been solicited and comments or suggested amendments have been incorporated. There is no evidence, however, that a common perspective on the future has ever been truly solicited nor has there be any apparent attempt to link the current efforts to future trend analyses or, perhaps, to parallel USAF analyses. Finally, given the draft nature of the existing documents and their limited distribution, a declaration and consensus on the strategic intent is still forthcoming.

There were also six process design features identified in the USAF approach. The first feature was an explicit conceptual approach to strategic visioning including the principles of collective “buy-in” and “backcasting” from the future. Apart from the distribution of drafts of orsfts of BT/TT0a

(ADM(Mat)) who provides equipment management and capital procurement support including some of the associated long-range planning for the Air Force. In regards to organizational cultural bias, Canada's Air Force's bureaucratic nature is very similar to that of the USAF. As to an installed base of strategic thinking, the 1994/95 *Project 2020* activity should have favourably influenced future strategic planning activities within the Air Force. Unfortunately, given subsequent events

the strategic visioning and long-range planning for key future capabilities / components such as space and UAVs.

DEFINITIONS & HIERARCHY OF DOCUMENTATION

In order to set the stage for subsequent discussions in this paper, we need to define and distinguish between at five conceptual terms and to separate between their meanings and their uses. The terms include theory, mission, vision, strategy, and transformation strategy. Author Carl Builder defines the first four conceptual terms as follows:

Theory: A theory is an explanation; a supposition about the relationship between things (i.e. an air power theory)

Mission: A mission is a purpose; a task or a function that is assigned or adopted (i.e. an Air Force mission)

Vision: A vision is a dream; an imagined objective and a conception of what should be (i.e. an Air Force vision)

Strategy: A strategy is a scheme; a concept for relating or how to connect ends and means (i.e. an Air Force strategy)⁴⁸

Theory. Although not explicitly mentioned in the draft, some aspects of air power theory are in fact discussed in *Canada's Air Force – A Vital National Security Institution*. As Carl Builder suggests, “[u]ltimately, the Air Force mission and vision must stand on a theory of air power – an explanation of how air power works and why it is important to those who must support it.”⁴⁹ He further suggests that a principal problem, however, is that the various theories/axioms of air power have been challenged in the past and that, in some respects, they are still being challenged to this day.⁵⁰ This point is important to note since air power theory is logically the foundation upon which everything else must rest. Unfortunately, just as the theories and axioms of air power have been challenged in other countries, they will undoubtedly be challenged once more in the Canadian context. Builder goes on to suggest that “[i]t is not enough that Air Force leaders have a perspective of the future that suits them; if the theory - and all that flows from such a theory – is to be sold, their perspective must be shared by the buyers – those in the [Canadian] public who must support (and pay for) implementing it.”⁵¹ It is therefore vital that Canada’s Air Force be on solid ground when it comes to air power

⁴⁸ Builder, Carl H., *The Icarus Syndrome: The Role of Air Power Theory in the Evolution and Fate of the US Air Force*, Transaction Publishers, New Brunswick, NJ, United States 1994, 206-207.

⁴⁹ *Ibid*, 230.

⁵⁰ Carl Builder suggests that, as originally conceived, air power was a theory composed of three axioms: air power can be employed decisively in war by striking at the heart of the enemy; to use air power decisively, command of the air (i.e. air supremacy or superiority is a prerequisite); and to gain command of the air and to use air power decisively in war, air power must be centrally and independently controlled. – *Ibid*, 207-216.

⁵¹ *Ibid*, 231.

theory. Consequently, the absence of a solid air power theory discussion⁵² in the draft of *Canada's Air Force – A Vital National Security Institution* is puzzling since, given its history, Canada is in general an “air-minded” nation.

In an article on the future of air power, author Philip Meilinger argues that paradoxically, air power's greatest weakness – its inability to hold ground – is in some circumstances precisely what makes it a very useful tool for governments.⁵³ It is less provocative and less risky than ground forces while air power's key strengths of flexibility coupled with an ability to employ rapid, discrete, precise and long distance power projection make it highly advantageous. In a somewhat different vein, author Shaun Clarke argues that small air forces should consider strategic air operations as one of their key functions. His conceptual analysis suggests that Strategic Persuasion Oriented Targeting (SPOT) allows smaller nations, such as Canada, to extract maximum value from even modest forces. The SPOT approach is essentially a results-focused approach in which aerospace strategic strikes would be used in direct pursuit of primary or ultimate political objectives.⁵⁴ These are the types of theoretical issues that need to be openly promoted and further explored.

Mission. The current Canadian Air Force mission is “to generate and maintain combat capable, multi-purpose air forces to meet Canada's defence objectives.”⁵⁵ Initial draft documentation did not directly amend the current mission but inferred changes to the mission would be likely. The latest draft of *Strategic Vectors* proposes the following mission statement: “To control and exploit the aerospace environment for military purposes which contribute to Canadian national and international objectives.”⁵⁶ However, another preceding segment also outlines the Air Force's domestic and international missions. Specifically these are listed as: “*protect sovereignty* by safeguarding air sovereignty and contributing to maritime and territorial sovereignty; *protect Canadians* through activity such as search and rescue; *protect Canadian resources* through fisheries patrols and pollution monitoring and *defend Canada* against such things as air terrorism...*defend Canadian interests* through the projection [of] aerospace power and *protect Canadian peace and security interests* through responses to threats to international peace and security and the provision of humanitarian assistance.”⁵⁷

⁵² The draft does contain a brief discussion on aerospace power, its attributes, and its components. However, the specific section on Canadian Aerospace Power simply notes that the Air Force has a distinctly different role, culture and tradition and observes that the Army and Navy hold different views on the application of aerospace power. Canada, Department of National Defence. *Canada's Air Force – A Vital National Security Institution (Draft 24 Jun 2003)*..., 7-8.

⁵³ Meilinger, Colonel Philip, S. “The Future of Air Power – Observations from the Past Decade” *The Royal Air Force Air Power Review*, Vol 3, No 1, (Spring 2000), 65.

⁵⁴ Taken from a review of Wing Commander S. Clarke's book, *Strategy, Air Strike and Small Nations*, Air Power Studies Centre, RAAF Base Fairburn, ACT, Australia, 1999. - *The Royal Air Force Air Power Review*, Vol 4, No 1, (Spring 2001), 128.

⁵⁵ Air Force Web Site: <http://www.airforce.forces.gc.ca>

⁵⁶ Canada, Department of National Defence. *Strategic Vectors (Draft 08 Mar 2004)*..., 19.

⁵⁷ *Ibid.*

Vision. Both the *Strategic Vectors* and *Aerospace Capability Framework* draft documents contains sections providing vision statements along with a brief explanation of the overall vision. The segment titled as “Vision” in the draft *Strategic Vectors* begins with the following statement: “Canada’s 21st Century Aerospace Force – A force based on excellence and professionalism, equipped, trained and ready to prevail in combat with the reach and power to contribute effectively to national and international security.”

The CF defines transformation as follows: “In the military context, transformation is a process of strategic re-orientation in response to change circumstances, designed to make substantial changes in the nation’s armed forces to ensure their continued effectiveness and relevance.”⁶³ It is also worth noting that each of the above definitions explicitly use the word “transformation” as opposed to “transformation strategy”.

The foreword of the draft *Strategic Vectors* indicates that the goal is “to transform the Air Force from a primarily static, platform-focused Air Force into an Aerospace Force that is expeditionary, network-enabled and results-focused Aerospace Force for the 21st Century.”⁶⁴ In order to implement these changes, the document then describes eight “vectors” to guide the transformation. Briefly, these vectors are: having a results-focused operational capability, having a responsive expeditionary capability, having transparent interoperability, developing transforming aerospace capabilities, providing transformation-enabling leadership, having multi-skilled and well-educated personnel, actively engaging Canadians and improving resource stewardship.⁶⁵

THE CANADIAN AIR FORCE VISION

The Canadian Air Force Context. Unlike the USAF, the Canadian Air Force is currently operating in somewhat of a policy vacuum. There is no direct external threat. In terms of a national security policy framework, Canada has only recently developed a National Security Strategy.⁶⁶ Canada’s vital national interests are vague and exactly how defence policy will fit into this new overall national security strategy is as yet unknown. Author Philip Meilinger suggests that vital “national interests” have given way to “key values”.⁶⁷ This further suggests that Canada and other nations will continue to intervene militarily when the nation’s involvement is considered “the right thing to do.”

The 1994 Canadian Defence White Paper is ten years old and it is currently in the process of being updated. A Canadian Forces military strategy is briefly outlined in *Strategy 2020* that, as previously mentioned, is also in the process of being updated to *Strategy 2025*. Given this broad and non-specific direction, the precise future focus for the Air Force is therefore unclear. Moreover, the rationale for any transformation is not driven by any wartime operational necessity or other strong imperative. As was the case in 1994, the principle problem for the Air Force seems to be the high overall cost of operating sophisticated aircraft fleets. This problem has however now been compounded by competing demands from the other services as they have also introduced “higher-technology” fleets and equipment.

⁶³ Canada, Department of National Defence. *2003-2004 Report on Plans and Priorities* (Ottawa, MND, 2003), 15.

⁶⁴ Canada, Department of National Defence. *Strategic Vectors (Draft 08 Mar 2004)*..., i.

⁶⁵ *Ibid*, 24-28.

⁶⁶ The first Canadian National Security Policy, *Securing an Open Society: Canada’s National Security Policy*, was only just published in April 2004. A foreign policy and defence policy review are now underway.

⁶⁷ Meilinger, Colonel Philip, S. “The Future of Air Power – Observations from the Past Decade” ..., 52.

Finally, unlike in the US Department of Defence, there is no transformation champion within the CF driving the transformation plans for each of services and other organizations (i.e., DCDS) forward in a coordinated fashion.

Vision - Issues & Problems. Author Carl Builder quotes from a RAND Corporation study on the role of visions in helping military organizations adapt to changing environments. This study offers four criteria for an effective organizational vision: the vision must be *inspirational* (both internally and externally), the vision must be *relevant* and *realistic* (with respect to the challenges and opportunities that confront the organization), the vision must be *clear* and *distinctive* (in the discrimination of the unique identity and purpose of the organization), and the vision must be *pervasive* and *stable, widely shared* and *understood* inside (and ideally outside) the organization. Carl Builder then adds two further criteria required for a vision including a *unique sense of identity* (i.e. who are we?) and *shared sense of purpose* (i.e. what are we about?).⁶⁸

Before the Canadian Air Force vision is finalized, it should be critically evaluated using criteria similar to those outlined above. In terms of the pervasive nature, stability and understanding of the vision, the lack of process to date has denied any impact on or “buy-in” by the rank and file in the Air Force. Similarly, the limited and ultra-brief consultation on the drafts has probably relegated the vision to an administrative review exercise by the senior echelon.

In the 1990s, USAF General McPeak argued that it was not enough to have a positive and inspiring vision developed by the leadership and shared by the ranks. He argued that there also needed to be a clear commitment to follow through on the vision.⁶⁹ Given the difficulties in consistency in visioning and long range planning within the Canadian Air Force within the last ten years, it would be difficult for many to have any confidence in the commitment to this latest proposed vision.

Interestingly, a key issue of considerable discussion and debate with the USAF, namely space, is also identified as a key operations component in the draft Canadian Air Force vision. The latest draft of *Strategic Vectors* goes on to suggest that the Canadian Air Force should become “responsible for providing Canadian Forces personnel with the space knowledge and understanding requisite to effective Canadian Forces operations.”⁷⁰ How this support by the Air Force should occur in the current CF construct is not adequately explained within the document. The USAF is still struggling to reconcile the differences between the air and space echelons within its own makeup and in a similar context, the CF responsibility for space operations and visioning appears to lie with the DCDS organization.

In terms of a historical comparison, it also useful to compare the latest proposed vision statement with the much earlier vision statement previously proposed by the Air

⁶⁸ Builder, Carl H., *The Icarus Syndrome: The Role of Air Power Theory in the Evolution and Fate of the US Air Force ...*, 276-277.

⁶⁹ *Ibid*, 276.

⁷⁰ Canada, Department of National Defence. *Strategic Vectors* (Draft 08 Mar 2004)..., 16.

Command *Project 2020* effort. The *Project 2020* vision⁷¹ is presented in diagrammatic form, (with perhaps the makings of a slogan): Aerospace Force [in] Action.⁷² In terms of “Aerospace”, it proposes “an organization which fully understands & exploits the full technological & physical domains of tomorrow’s aerospace environment” with a “Force” and “an organization which operationally & culturally focussed & unified in the provision of aerospace combat services”. The “Action” segment refers to “an organization which is actively & constructively engaged, on a daily basis, in the projection of national will, in the defence of national jurisdictions & in the promotion of domestic social & economic well-being.” One could argue that this nine-year old vision is still compelling and relevant to the future and that it clearly addresses some of the key criteria needed for a vision statement. Moreover, it also incorporates the proposed missions in the vision statement.

Finally, it must be pointed out that there is one glaring omission in the draft *Strategic Vectors* vision. In generating a vision for the future, it is also logical (and pivotal) to identify the core competencies upon which the organization will build that future. The Navy in its *Leadmark* documentation generates three core “operational” naval competencies and then proceeds to “build upon” these core competencies in identifying the future naval capability requirements; all of which are identified in generic terms only (i.e. not based upon platforms). In a slightly different vein, but in similar fashion, the USAF has identified its three “Air and Space Core Competencies”. The USAF defines these competencies⁷³ as follows:

Developing Airmen: *The heart of combat capability.* The ultimate source of air and space combat capability resides in the men and women of the Air Force. Our first priority is ensuring they receive the education, training and professional development necessary to provide a quality edge second to none.

Integrating Operations: *Maximizing combat capabilities.* Our inherent ability to envision, experiment and ultimately execute the union of a myriad of platforms and people into a greater synergistic whole is pivotal to maximizing air and space power in a joint warfighting environment.

Technology-To-Warfighting: *The tools of combat capability.* The Air Force nurtures and promotes its ability to translate vision into operational capabilities in order to prevail in conflict and avert technological surprise.

While the draft *Strategic Vectors* document hints at some of the Canadian Air Force’s core competencies, it does not explicitly state them. It therefore makes the ensuing section on transformation and the remaining documentation less than clear in terms of the priorities and the core competencies to be preserved and maintained or further developed.

⁷¹ Canada, Department of National Defence. *Project 2020 – Flight Plan for Change (Volume III)...*, 4.

⁷² Recently, the USAF in particular has used the slogan methodology to capture the essence of the vision being proposed (i.e. *Global Reach-Global Power and Global Engagement*).

⁷³ United States, United States Air Force. Pamphlet: *The Edge – Air Force Transformation*. XPXT, 11CS/SCUS Media Services, 2003, 6.

A CANADIAN AIR FORCE STRATEGY?

Strategy - Issues & Problems. Missing from all of the current draft documentation is any clear recognition of the existence of or requirement for an overarching Canadian Air Force strategy. As previously indicated, the *Aerospace Capability Framework* draft documentation does, however, mention both a near-term stabilization strategy and a transformation strategy. The author would argue, however, that there has been a more enduring underlying strategy for the Canadian Air Force. The draft *Strategic Vectors* alludes to such a strategy when it discusses the subject of transformation.⁷⁴ For example, since the 1950s, driven primarily by mutual North American Air Defence (NORAD) requirements, the Canadian Air Force has enjoyed an enviable close relationship with the USAF. The Canadian Air Force has consistently leveraged its relationship with the USAF to achieve access to information, equipment, technology, training, and procedures. In many areas, for logical reasons, the Canadian Air Force has adopted USAF doctrine, training practices, philosophies, programs and protocols.⁷⁵ Personal connections at the highest levels have ensured long-standing mutual cooperation. This connection remains to this day, despite the fact that from an equipment / platform perspective the Canadian Air Force is more akin to the United States Navy / United States Marine Corps (USN / USMC) with their respective fleets.⁷⁶ Therefore, the author would argue that an “unofficial” underlying Air Force strategy has been to maintain close cooperation with the United States Air Force. It should be noted that the Canadian Navy appears to have adopted the same underlying strategy with the USN deploying regularly with their carrier battle groups. It should also be noted that the maintenance of a “special relationship with principal allies” (and the US in particular) is an important element of the CF’s *Strategy 2020*.

Also missing is any recognition of the key relationship between Canada’s aerospace industry and the Air Force. The original *Project 2020* study noted this relationship and consequently called for the development of a national aerospace strategy.⁷⁷

THE CANADIAN AIR FORCE TRANSFORMATION STRATEGIES

Transformation Strategies - Issues & Problems. Both the draft *Strategic Vectors* and *Aerospace Capability Framework* documents contain sections labeled

⁷⁴ Canada, Department of National Defence. *Strategic Vectors* (Draft 08 Mar 2004)..., 12.

⁷⁵ For example, the Canadian Air Force has adopted the Aircraft Structural Integrity Program (ASIP) philosophy originally developed for the USAF. This approach caused considerable difficulties with the introduction of the CF-18 *Hornet* which had been designed to the USN’s “failsafe” design philosophy.

⁷⁶ The CF-18 *Hornet*, CC130 *Hercules*, CH-113 *Labrador*, CH124 *Sea King*, CP140 *Aurora*, and CH146 *Griffon* fleets, which constitute the bulk of the Canadian Air Force operational fleets, are similar to platforms currently operated by the USN / USMC. The CC130 *Hercules* and the CT156 *Harvard II* trainer are the only platforms, which the CF currently shares in common with the USAF.

⁷⁷ Volume II of the study calls for development of a National Aerospace Strategy with the objective to develop a comprehensive and collective vision with respect to national aerospace research and development, training and education, industrial development, and national infrastructure and service management. - Canada, Department of National Defence. *Project 2020 – Flight Plan for Change (Volume II)*..., 3-9.

“Transformation”. Unfortunately, between these two draft documents, there is currently considerable confusion and difficulty created by the varied use of the term “transformation” along with a mixing of terminology, meaning and project names. The author prefers the USAF definition of transformation previously outlined, namely a process including changes in operational concepts, organizations and/or technologies to improve warfighting capabilities.

More importantly, author Bruce McClintock argues that successful transformations must involve a “trinity” of vision, culture and assessment.⁷⁸ Particularly in military organizations, he suggests that change is “most likely to occur when leaders articulate coherent visions of future warfare and the military culture allows advocates of that vision to develop competing theories of victory – theories that are openly [and critically] assessed.”⁷⁹

Before any assessment is undertaken, it must be noted that the lack of coherence in the draft documentation is understandable given the various early iterations that were available to the author at this point. Notwithstanding this difficulty, however, it must also be noted that few specifics for the Air Force transformation are presented in either document. An explanation of the overall process, the objectives, the methodology, and the resources to be devoted to the effort is never fully articulated. The transformation “vectors” that are provided in *Strategic Vectors*

example, had knowledgeable staffs carried out challenging assessments, a better understanding of the precise concepts, organizational constructs and technologies, which are relevant and achievable in the Canadian context, may have been revealed. Unlike in the USAF process, there is no evidence that any critical analyses, simulations, war-gaming or “think-tank” efforts have been engaged during the Canadian Air Force process to date.

Appendix A is the author’s attempt at providing a brief synopsis of the applicable vision, mission, roles, core values, competencies, attributes and transformational issues for various organizations (CF, USAF and Canadian Air Force) using the previously referenced documentation (*Strategy 2020, Strategy Vectors, Aerospace Capability Framework, Project 2020, etc*).

Appendix B is the author’s perspective on suitable vision, mission, roles, core values, competencies, attributes and transformational issues for the future Canadian Air Force.

For comparison purposes, Appendix C provides a brief synopsis of *Strategy 2020* and the corresponding *Strategic Operating Concept 2020*.

THE FUTURE AEROSPACE FORCE

From the author’s perspective, there has been a coherency and consistency in effort in the latest rounds of USAF visioning and strategic planning, which has been missing from the Canadian Air Force equivalent. Within the USAF efforts, the same “threads” run through its air power doctrine, theory, missions, vision and transformation plans⁸⁰ and most importantly, a broad cross-section of the organization has been engaged. This is not say that USAF documentation is perfect or that thorny issues, such as space or budgetary constraints (as they apply to long range planning and transformational issues), have been resolved. But the USAF approach has had a rigor and level of overall involvement that will ensure its continued evolution. Clearly, however, given the procedural difficulties, resource constraints and conceptual issues associated with the latest round of Canadian Air Force strategic visioning and long range planning, there is a distinct possibility that key factors, issues and constraints have been overlooked. There is a strong danger that the latest strategic visioning and planning effort has been reduced to an administrative exercise instead of establishing a sound foundation of the future Air Force. Canada’s Air Force therefore needs to review its current strategic planning efforts with a view to ensuring there are no missing factors in the basic vision and future strategy. Once these factors have been addressed, then there are perhaps additional

⁸⁰ For example, the latest edition of the USAF Basic Doctrine, Chapter 6 outlines the core competencies and distinctive capabilities needed with the Air Force. Chapter 7 explains the links to vision and operating concepts to the doctrine. These same elements are then mirrored in each of the other USAF/Joint vision, transformation and concept documentation. United States, United States Air Force. *United States Air Force – Basic Doctrine - Document I*, HQ AFDC/DR, Maxwell Air Force Base, Alabama, 17 November 2003, 87-103.

transformational capabilities, characteristics and enablers, which also need to be considered.

Future Relevance & Associated Key Factors. Following a review of the latest available documentation, the author remains unconvinced as to whether all of the key factors and constraints facing the Canadian Air Force have in fact been adequately addressed. It is in these areas that the Canadian Air Force is both similar to and yet different from its United States counterpart.

Almost ten years ago, *Project 2020* argued that redefining the Air Force competencies, unifying the force structure, rationalizing and renewing capital resources and realigning personnel resources and career profiles were key elements to the future relevance of the Air Force.⁸¹ The strategies presented therein were driven by the perceived need to adapt to the projected national security, economic, societal and technological developments. A review of rationale and logic of this document suggests that the analyses therein are still pertinent to the future. Moreover, the most recent Queens Defence Management Studies assessment⁸² again highlights, in particular, the economic and demographic challenges faced by the CF as originally identified in the *Project 2020*. The CF and Canada's Air Force are not alone in this regard. The Royal Australian Air Force (RAAF) projects that if it retains its current employment and recruiting practices, that its force will have to decline from a total strength of 14,000 personnel (in the year 2000) to a force of approximately 7,000 personnel in 2020.⁸³

Apart from personnel, the other driving factor (and principal constraint) facing the Air Force must be the issue of adequate funding. The Air Force's existence is heavily reliant on expensive technology and, as budget cuts in the post 1994 White Paper era have already proven, the ability to continue to sustain the Air Force with sufficient funding in competition with other services will be pivotal to the future. Moreover it is not just a question of capital costs but rather the total funding envelope for (and the balance among) capital, operations and maintenance and personnel expenditures. As the Army strives to move itself into the future, the ongoing struggle for sufficient funding has already materialized.⁸⁴ Similarly, author Phillippe Lagassé argues that, because of the budget dilemma, focussing capital funding on a smaller set of more specialized capabilities will provide smaller but more robust, high calibre forces capable of operating with the US military while preserving an operations and maintenance budget large

⁸¹ Canada, Department of National Defence. *Project 2020 – Flight Plan for Change (Volume III)* ..., 5.

⁸² Bland, D.L, MacDonald, B., Ankerson, C., and Marsh, H., *The Claxton Papers*, Queens University Defence Management Studies Program, Kingston, Ontario, Canada, 2003.

⁸³ Australia, Royal Australian Air Force, *AAP1000 – Fundamentals of Australian Aerospace Power – Fourth Edition*, Aerospace Centre, RAAF Base Fairburn, ACT, Aug 2002, 293.

⁸⁴ In June 2003, then Chief of Land Staff, General Hillier raised concerns over the status of the Strategic Capital Investment Plan (SCIP) arguing that the Army Transformation Plan in particular should shape the SCIP in both the short and long term. In his vision of the future, he suggested that it would be unlikely for the CF to fight in "blue skies or blue waters" and consequently argued for additional investment in the Army plan at the expense of the other service requirements.– Lieutenant General R.L. Hillier, *Strategic Capability Investment Plan – Land Effect* (National Defence Headquarters Ottawa, Memorandum 3136-5(CLS) 26 June 2003)

enough to support a high operational tempo.⁸⁵ Indeed, as we have seen, the Air Force itself has also raised this specialization possibility.⁸⁶ The Air Force must therefore convincingly assess and then accept or reject this approach.

One possible focus area for specialized capabilities might for example be that of strategic and tactical airlift. A case could certainly be made that improved strategic and tactical airlift capabilities would allow Canada's Air Force to fulfill valuable international and national functions providing relief for a chronic shortage of capacity. Canada has recently relied upon a mixture of both military and increasingly civilian contracted strategic airlift to meet its own demands. The same is true for other Allied nations. But the danger of using civilian transport aircraft even in a moderately hostile environment was graphically illustrated by a recent incident that was very nearly catastrophic. On 22 November 2003, a civilian chartered cargo aircraft, a DHL/EAT A300 Airbus, (virtually identical in many respects to the CC150 *Polaris* transport aircraft operated by the CF) on takeoff from Baghdad Airport was hit by a shoulder-fired surface to air missile. The aircraft suffered serious structural damage and lost all hydraulic pressure. The crew subsequently lost all primary flight controls because there was no manual reversion capability in an airframe designed for civil use. The aircraft then had to be landed by the use of engine power settings only.⁸⁷ This serious incident suggests that purpose-designed military strategic and tactical airlifters with their normal system redundancies and self-defence capabilities would be inherently safer for valuable military cargos.

Core Competencies. Canada's Air Force also needs to define its future core competencies in explicit terms. The RAAF defines its core competencies in operational terms. As we have already discussed, the USAF defines its core competencies in terms of personnel, operations and technology. In the author's opinion, Canada's future Air Force needs to define its future competencies both in terms of personnel and operations. The core competencies for our personnel should include professional and technological competence, cohesion and discipline. The operational competencies should be based upon those strengths associated with the air forces including speed, reach, flexibility, precision intervention, information superiority and perspective. See Appendix D for further details and explanation.

Values. In the author's opinion, the current Air Force "personnel" values of professionalism, excellence and teamwork remain valid now and for the future. In addition, however, a statement of overall values (similar to that used by the RAAF) is also appropriate. Such a value statement could be "Canada's Air Force stands for the delivery of effective and precise aerospace power in the defence of Canada's people, their security and interests".

⁸⁵ Lagassé, Phillippe, "Short Term Gain, Long Term Pain: The Canadian Defence Budget Dilemma" *The Canadian Institute of Strategic Studies*, Strategic Datalink #118, March 2004, 4.

⁸⁶ The issue of greater specialization for the Air Force was raised in the paper: *Vectors 2020 – A Canadian Air Force Discussion Paper* (Ottawa, Directorate of Air Strategic Planning, 2000).

⁸⁷ Hughes, David and Dornheim, Michael, "No Flight Controls", *Aviation Week & Space Technology*, Volume 159 Number 23 (8 December 2003), 42-43.

Aerospace Power Theory. The author contends that a relevant aerospace power theory upon which to build is that which author Carl Builder has suggested:

In the emerging, less controllable world of global commerce and borderless nations, the military medium of dominance and, hence, of choice to power elites will be the aerospace continuum because of its universal, rapid access and unique vantage point. Hence, the control and exploration of that medium, more than any ot

establish the cultural aspects, organizational changes, technological imperatives and concepts of operation needed to effect the transformation for the future.

THE FUTURE STRATEGIC VECTORS?

As previously indicated, the author considers the existing draft *Strategic Vectors* document to be inadequate in terms of describing how the Air Force should go about transforming itself. The Navy has clearly described the capabilities that will be required in their future forces. The existing Air Force documentation indirectly mentions some aspects in this regard but a more comprehensive review and assessment is needed.

Operational Capabilities / Competencies. The original Air Command *Project 2020* documentation suggests that the future operational competency areas should be broken down into theatre surveillance, precision intervention, joint air, combat airfield support and force generation / strategic support.⁹¹ In the author's opinion, these same operational capabilities (competencies), in a slightly modified form, are still very germane to the future.

Theatre surveillance is essentially a broad three-dimensional theatre surveillance mandate both within Canada and deployed in support of CF operations. This capability would have a very strong remote sensing and space based character.

Precision intervention is the provision of air control combined with an ability to provide rapid, precise, short duration strikes in support of CF operations. The emphasis would be on a precision strike capability for controlled intervention in the air, on land or at sea.

In *Project 2020*, joint air is defined as providing direct air support to land and naval forces in operations and for search and rescue and for other government departments in the domestic setting. It further suggests that this include close-in surveillance and attack services as well as tactical lift and combat search and rescue. Interestingly, strategic airlift is not included in this competency but instead is included under force generation / strategic support. In the author's opinion, joint air should be confined to the provision of manned platforms only for tactical / strategic airlift and search and rescue. Unmanned technology may then allow other aspects of joint air support such as close-in surveillance and attack to also be provided.

The combat support capability is the essential support / resource required for globally deployed air operations. Air movement and airfield support echelons are essential elements of this combat support.

Underpinning all of the above capabilities would be the force generation elements including training establishments plus the military and civilian team sustainment activities. See Appendix D for further details and explanation.

⁹¹ Canada, Department of National Defence. *Project 2020 – Flight Plan for Change (Volume III)*..., 7-8.

Operational Characteristics. In the author's opinion, apart from being expeditionary in character, there are some further characteristics, which will be key to Canada's future Air Force. The primary characteristic, which should be sought for all equipment, platforms and even concepts, is multi-role use.⁹² Virtually, every aircraft platform that the CF has acquired in the past 20 years has been used in a multi-role capacity in ways that the original equipment manufacturers never envisaged. Unfortunately, this usage has then further complicated the sustainment required. Technology in the future will allow multi-role use for virtually all types of equipment and platforms whether ground, air or space based. Multi-role use must therefore be embraced but also appropriately catered to in the acquisition, engineering and support structures. A by-product of continued multi-role philosophy is the possibility of further fleet rationalization. During the 1990s, fleet rationalization was a goal of the Air Force in order to assist with reductions in training, support and logistic costs. This goal needs to continue. See Appendix D for additional desirable characteristics.

Transformational enablers. Having defined the desired capabilities and characteristics, there are enablers, which will help the Air Force further "transform". In terms of culture, the Air Force needs an operational culture that is ready to adapt and innovate. Exploration of boundaries and critical assessment to continuously improve must be inculcated in each generation of personnel. Given the likely impact of demographics, a continuing focus on high quality personnel policies and training programs will be required. Consideration of refocused and streamlined trade / classification structures to allow maximum flexibility of employment and career progression needs careful assessment.

New concepts of operation need to be evolved and understood. The integration of space and C4ISR, homeland security, global mobility, precision intervention and expeditionary wings are possible concepts in themselves that need to be explored and refined. In terms of organizational concepts the Air Force also needs to reconsider its total force structure.

In the area of technology and material, the Air Force is currently focused on legacy platforms. Given the driving factors of demographics and economics, the future undoubtedly holds a mixture of Unmanned Aerial Vehicles (UAV) and Uninhabited Combat Aerial Vehicles (UCAV) technology. Canada's Air Force needs to explore and better define the way ahead for these unmanned platforms instead of being content to let other air forces orchestrate the way.

Additionally, given the fiscal constraints that the Air Force will continue to face, innovative procurement methodologies will need to be employed wherever possible. Our allies will face similar struggles. If outright procurement of some systems for Canada

⁹² According to the Commander of the Israeli Air Force, Major General D. Haloutz, its vision for both its air and spacecraft is also that of multi-role and multi-use. Johnson, Dana, J. and Levite, Ariel, E. "Toward Fusion of Air and Space – Surveying Developments and Assessing Choices for Small and Middle Powers" *RAND Conference Proceedings*, National Security Research Division, Rand Corporation, Santa Monica, CA, United States, 2003, 156.

remains cost prohibitive, perhaps it is time to reconsider a “Lend-Lease” arrangement or “Peace Wings” program with the USAF.⁹³ Canadian crews could operate and maintain US equipment, with provisions to return the equipment for US use in times of operational need.

CONCLUSIONS

In summary, the Canadian Air Force has created a basic framework of documentation for a vision, strategy and transformation plan.

Unfortunately, the strategic planning process used has suffered from a chronic shortage of both resources and procedural rigor. After a logical and cohesive attempt at thorough long range strategic planning in the mid-1990s, the current lack of process is worrisome. The latest attempt at visioning and strategic planning appears to have used none of the successful process design features or leverage points as identified in a USAF study. Key principles such as collective buy-in, long-range planning teams, supporting analyses appear to have overlooked. The lack of process to date has effectively negated any substantive impact on the rank and file in the Air Force. Similarly, the consultation to date on the draft vision has been limited to an administrative review exercise. The current NDHQ construct and internal division of responsibilities creates further problems, which compound the existing Air Force process difficulties.

Missing from all of the documentation is any recognition of the elements of an overarching Canadian Air Force strategy. An explanation of the overall strategic planning process, the objectives, the methodology, and the resources to be devoted to the effort are never fully detailed.

Unfortunately, there does not appear to be any concrete understanding or consistent use of the term “transformation”. The current transformation “vectors” are not detailed objectives but rather a conglomeration of roles, capabilities, attributes, goals, cultural and detail issues, many of which are described in terms of generalities or, conversely, in terms of specific implementation initiatives. Most importantly, there appears to be a lack of any challenging or critical assessment of the precise concepts, organizational constructs and technologies, which are relevant and achievable. Similarly, there is no evidence that any supporting analyses, simulations, war-gaming or “think-tank” efforts have underpinned the Canadian Air Force process to date.

Given the process difficulties, it is therefore quite possible that key factors in the future of the Air Force have not been adequately considered. In particular, the future economic and demographic challenges faced by the Air Force as identified in various studies need to be fully addressed.

⁹³ The Lend-Lease Act was a World War II arrangement between the United States and the Allies which allowed the US to exchange, lend, lease or dispose of military equipment, etc to allied nations . In 1961, a total of 66 CF-101 Voodoos were transferred from USAF stocks and began service in the Royal Canadian Air Force. In 1971, under program known as “Peace Wings”, the survivors of the original 66 Voodoos were traded in for improved F-101's.

The challenge faced by Canada's Air Force was summed up 10 years ago, in its first attempt to identify a vision and strategy for the 21st century:

The challenge that faces the air force, in keeping with the CF, is how best to meet tomorrow's global and domestic realities...[as we move into] an age of global economics, an age of conservation, an age of incredible information accessibility, but also into an age of heightened global instability, regional strife and war...the twenty-first century will demand that the air force be acutely sensitive to the art of the possible, socially as well as technologically. The air force will have to understand that Canada's military organizations are, in the final analysis, a reflection of the nation's self-perception, economic well-being and aspirations.⁹⁴

RECOMMENDATIONS

Given the continuing relevance of the previous Air Command *Project 2020* study, today's Air Force should review this former effort and consider using it as a basis for moving forward in order to provide a comprehensive outline of the future vision, strategy and transformation initiatives. In order to overcome the resource issue, the Air Force needs to assign a full-time planning team to strategic planning. Logically, this planning team needs to be part of the proposed Air Warfare Centre.

The future vision for Canada's Air Force needs to be carefully reconsidered. It needs the considerable committed involvement of the Air Force leadership, a dedicated planning staff, and the brightest and best of the wider Air Force team (including academia, Air Force support, science and technology and industrial support personnel, the training institutions and the Air Force Association). The Air Force needs to consider adopting a pragmatic version of the USAF's approach to strategic planning with regular annual updates⁹⁵ and with major cyclical reviews, perhaps every five years. The "guided incrementalism" used by the USAF to transform itself is exactly the approach needed in the Canadian context. In order to make significant progress, Canada's Air Force needs to define its future core operational and personnel competencies in explicit terms. Similarly, the Air Force's future values, missions and roles need to be carefully articulated. Before any transformation plan can be fully fleshed out, the basic elements of any underlying and overarching strategy need to be carefully considered and detailed. The Air Force needs to define its future force in terms of capabilities and characteristics instead of in terms of equipment and platforms.

Having established a clear vision, the Air Force then needs to determine the cultural aspects, organizational changes, technological imperatives and concepts of operation needed to effect the transformation for the future. Finally, once the future vision is better delineated and a comprehensive future transformation plan articulated, it must be sold both to the internal Air Force community and to the larger military, political and public audiences. It is imperative that the vision, strategy and transformation initiatives withstand continued critical assessments from all parties.

⁹⁴ Canada, Department of National Defence. *Project 2020 – Flight Plan for Change (Volume II)*..., 1-2

⁹⁵ The annual Air Symposium would be a logical medium for regular updates.

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Appendix A

Organization	Vision	Mission	Roles
Strategy 2020	The Defence Team will generate, employ & sustain high quality, combat capable, interoperable, deployable, task tailored forces that will exploit leading edge doctrine & technology, be an innovative knowledge-based institution under transformational leadership & coherent management	To defend Canada, Canadian interests & values while contributing to international peace & security	(None Specified)
USAF	Current: Global Vigilance, Reach & Power	Current: To defend the US & protect its interests through air & space power	<ul style="list-style-type: none"> ➤ Full range
Canadian Air Force 2003 / 2004	Current: Proud, Professional & Combat Capable Strategic Vectors: A force based on excellence & professionalism equipped, trained and ready to prevail in combat with the reach & power to contribute effectively to national & international security	Current: To generate & maintain combat capable, multi-purpose air forces to meet Canada's defence objectives	Aerospace Capability Framework: <ul style="list-style-type: none"> ➤ Safeguard sovereignty ➤ Defend Canada ➤ Protect Canadians ➤ Protect Canadian Resources ➤ Project National Power & Influence ➤ Project Interests & Values
Air Command Project 2020 – Flight Plan for Change	Aerospace – an organization that fully exploits the technological & physical domain of air & space Force – an organization that is operationally & culturally focused & unified in the provision of aerospace combat Action – an organization actively & constructively engaged in the projection of national will, defence of Canada & the promotion of domestic social & economic well being	The mission of tomorrow's air force must be to develop, maintain and operate a combat capable aerospace force as part of the CF team to project national will, defend the nation and promote national well being	<ul style="list-style-type: none"> ➤ Projection of National Will ➤ Defence of National Jurisdictions ➤ Promotion of National Well-being within domestic community and economy

Organization	Core Values	Core Competencies	Distinctive Capabilities / Attributes	Transformational Issues
Strategy 2020	(None Specified)	<ul style="list-style-type: none"> ➤ Command & Leadership ➤ Multi-skilled personnel ➤ Doctrine / Technology training ➤ Modern management ➤ Special relationship with Principle Allies 	<ul style="list-style-type: none"> ➤ Innovative Path ➤ Decisive Leaders ➤ Modernization ➤ Globally Deployable ➤ Interoperable ➤ Career of choice ➤ Strategic partnership ➤ Resource Stewardship 	<ul style="list-style-type: none"> ➤ Modernization ➤ Deployability ➤ Interoperability ➤ Force Structure ➤ Domestic Capability ➤ Jointness ➤ Capital Investment ➤ Command & Control ➤ Engaging Canadians ➤ Employer of Choice ➤ Proactivity
USAF	<ul style="list-style-type: none"> ➤ Integrity First ➤ Service before self ➤ Excellence in all we do 	<ul style="list-style-type: none"> ➤ Developing Airmen ➤ Technology to warfighting ➤ Integrating operations 	<ul style="list-style-type: none"> ➤ Air & Space Superiority ➤ Global Attack ➤ Rapid Global Mobility ➤ Precision Engagement ➤ Information Superiority ➤ Agile Combat Support 	<ul style="list-style-type: none"> ➤ Technologies ➤ Concepts of Operations ➤ Organizational Structures
Canadian Air Force 2003/2004	<p>Current:</p> <ul style="list-style-type: none"> ➤ Professionalism ➤ Leadership ➤ Excellence ➤ Professionalism ➤ Teamwork ➤ Excellence <p>Strategic Vectors:</p> <ul style="list-style-type: none"> - - - 	(None Specified)	<p>Strategic Vectors:</p> <ul style="list-style-type: none"> ➤ Combat capability ➤ Interoperable & Networked ➤ Meaningful & Sustainable ➤ Rapid Response ➤ Expeditionary Reach & Power 	<p>Strategic Vectors:</p> <ul style="list-style-type: none"> ➤ Results focused ops capability ➤ Responsive Expeditionary capability ➤ Transparent interoperability ➤ Transforming aerospace capabilities ➤ Transformation enabling leadership ➤ Multi-skilled, well-educated people
Air Command Project 2020 – Flight Plan for Change	(None Specified)	<p>Operational</p> <ul style="list-style-type: none"> ➤ Theatre ➤ Surveillance ➤ Precision Intervention ➤ Joint Air ➤ Combat Airfield Support ➤ Force Generation & 	<ul style="list-style-type: none"> ➤ A National Aerospace Strategy ➤ Streamlined & stabilized procurement ➤ Deployed operations capabilities ➤ Domestic infrastructure synergy ➤ Rationalized throughput ➤ Reoriented output 	<ul style="list-style-type: none"> ➤ Redefined force competencies & associated outputs ➤ Unified force structure ➤ Rationalized & renewed capital resources ➤ Realigned personnel resources & career profiles

Appendix A

Canada's Air Force	Vision	Mission	Roles
Proposed	<p>Aerospace – an organization that fully exploits the technological & physical domains of air & space</p> <p>Force – an organization that is operationally & culturally focused in the provision of aerospace combat power</p> <p>In Action – an organization constructively engaged in the projection of national values, in the defence of Canada & in the promotion of Canadians domestic well-being</p>	To generate & maintain multi-purpose aerospace capabilities for the military control and exploitation of the aerospace continuum to meet Canada's National Security Objectives	<ul style="list-style-type: none"> ➤ Safeguard Canadian sovereignty ➤ Defend Canada ➤ Protect Canadians ➤ Protect Canadian Resources ➤ Project National Values

Canada's Air Force	Core Values	Core Competencies	Distinctive Capabilities / Attributes	Transformational Issues
Proposed	<p>The Air Force stands for: the delivery of effective and precise aerospace power in the defence of Canada's people, their security and their values.</p> <p>Air Force Personnel Values are:</p> <ul style="list-style-type: none"> ➤ Professionalism ➤ Excellence ➤ Teamwork 	<p>Operational:</p> <ul style="list-style-type: none"> ➤ Theatre Surveillance ➤ Precision Intervention ➤ Joint Air Support ➤ Combat Support ➤ Force Generation ➤ Support <p>Personnel:</p> <ul style="list-style-type: none"> ➤ Professional & Technological Competence ➤ Cohesion ➤ Discipline 	<p>Operational Capabilities:</p> <ul style="list-style-type: none"> ➤ Ensure dominant use of atmospheric domain ➤ Ensure dominant use of space domain ➤ Provide continuous tailored accurate information ➤ Provide rapid & global task tailored precision intervention ➤ Provide rapid & global Joint Air support ➤ Provide robust Combat Support ➤ Provide robust Force Generation & Sustainment <p>Personnel:</p> <ul style="list-style-type: none"> ➤ Recruit & retain a professional cadre ➤ Develop multi-skilled, highly-educated professionals ➤ Ensure innovative & flexible cadre ➤ Ensure resource stewardship ➤ Connect with Canadians <p>Operational Attributes:</p> <ul style="list-style-type: none"> ➤ Expeditionary & rapidly deployable ➤ Multi-role & force multiplier use ➤ Inherent Self-Defence capabilities ➤ Sustainable 	<p>Vision:</p> <ul style="list-style-type: none"> ➤ A widely accepted & achievable Air Force vision ➤ National aerospace strategy ➤ Long term commitment <p>Culture:</p> <ul style="list-style-type: none"> ➤ Adaptive & innovative ➤ Exploration & critical examination <p>Concepts of Operation:</p> <ul style="list-style-type: none"> ➤ Effects Based Operations ➤ Expeditionary / Deployed Ops ➤ Domestic Synergy ➤ Simulation + Wargaming+ Test & Evaluation <p>Technology & Material:</p> <ul style="list-style-type: none"> ➤ Space & Infosphere ➤ UCAVs / UAVs ➤ Precision Intervention ➤ Focused Logistics & Maintenance ➤ Innovative Procurement <p>Organization:</p> <ul style="list-style-type: none"> ➤ Personnel Development ➤ Long Range Planning ➤ Air Warfare Centre

APPENDIX C

Hierarchy of Documents + Synopsis

CANADIAN NATIONAL DEFENCE STRATEGY - (*Strategy 2020*)⁹⁶

A “Transformation” Strategy:

- Desired Attributes:
 - Modernization with competencies in space, telecom & IO
 - Deployability
 - Interoperability
 - Force Structure = adaptable, multi-purpose combat-capable
 - Domestic Capabilities
 - Jointness – internal & external including other Gov’t departments
 - Capital Program Investment
 - Command and Control
 - Engage Canadians
 - HR = “employer of choice”
 - Proactivity

- Desired Objectives:
 - Innovative Path
 - Decisive Leaders
 - Modernization
 - Globally Deployable
 - Interoperable
 - Career of Choice
 - Strategic Partnerships
 - Resource Stewardship

CANADIAN NATIONAL DEFENCE (FUTURE) CONCEPT OF OPERATIONS - (*Strategic Operating Concept 2020*)⁹⁷(draft only)

- Drivers:
 - Multi-Dimensional Battlespace
 - Agility
 - An Interagency & Multinational Approach
 - Global Mobility

⁹⁶ Canada, Department of National Defence, *Shaping the Future of Canadian Defence: A Strategy for 2020*, (Ottawa: Department of National Defence, June 1999).

⁹⁷ Canada, Department of National Defence, *Strategic Operating Concept 2020*, (Draft) (Ottawa: Department of National Defence, June 2002).

Appendix A

- Concepts:
 - o Overarching Concepts
 - Agility
 - Modularity – tactically self-sufficient force packages
 - o Supporting Concepts
 - Command & Control
 - ◁ Common Operating Picture
 - ◁ Joint / Integrated Command at Strategic & Operational Levels
 - ◁ Accelerated Command Decision Process
 - Information & Intelligence
 - ◁ Knowledge Superiority
 - ◁ Joint ISR
 - ◁ Secure access
 - Multi-Dimensional & Effects Based Operations
 - ◁ Cohesive international, interdepartmental & international response – secure & fluid collaborative process
 - ◁ Precision Engagement
 - ◁ Comprehensive operational net assessment
 - ◁ Interoperability
 - ◁ Strategic Mobility
 - ◁ Distributed Basing
 - ◁ Continuous Force Protection
 - Sustainment
 - ◁ Rapid Force Deployment
 - ◁ Global Distribution System
 - ◁ Information Fusion – Visibility
 - ◁ Joint & Combined Interoperability
 - ◁ Strategic Partnership with Industry
 - ◁ Military Engineering for Sustainment
 - ◁ Medical / Health support
 - ◁ Equipment Management
 - ◁ Sustainment Technology & Innovation
 - Personnel / Equipment Generation
 - ◁ Partnership with private sector
 - ◁ Flexible & adaptable MOS structure
 - ◁ Flexible, adaptable & innovative work fore

ELEMENT (FORCE GENERATOR) TRANSFORMATION STRATEGIES & CONCEPTS

- Army – “*Advancing With Purpose: The Army Strategy*” 98

⁹⁸ Canada, Department of National Defence, *Advancing with Purpose: The Army Strategy* (Ottawa: Department of National Defence, May 2002)

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- Navy – “ *Leadmark: The Navy’s Strategy for 2020* ”⁹⁹
- Air Force - “ *Strategic Vectors* ” (Draft Only)¹⁰⁰
- DCDS – (for Space, UAVs, etc) ?¹⁰¹

⁹⁹ Canada, Department of National Defence, *Leadmark: The Navy’s Strategy for 2020* (Ottawa: Department of National Defence, June 2001)

¹⁰⁰ Canada, Department of National Defence. *Strategic Vectors (Draft 08 Mar 2004)*. (Ottawa: Department of National Defence, Chief of the Air Staff, 2004).

¹⁰¹ To the author’s knowledge there is no strategic planning document for the Deputy Chief of Defence Staff organization.

APPENDIX D

A Proposed Air Force Transformation Strategy for 2020

In a manner similar to the Navy's *Leadmark* strategy¹⁰², the Air Force needs to define its core competencies and required capabilities / characteristics in a general manner. The following paragraphs outline represent the author's attempt at an initial starting point in this regard.

Introduction

The Canadian Air Force will continue its development as a highly adaptable and flexible force, ready to provide the government with a wide range of relevant policy options across a continuum of domestic and international contingencies up to mid-level military operations.

The Air Force will generate combat capable forces that are responsive, rapidly deployable, sustainable, versatile, lethal and survivable. Canada's Air Force, from individual units to complete squadrons, will be tactically self-sufficient.

The national will to remain engaged internationally means that the Canadian Air Force will operate in alliances or coalitions with the forces of like-minded nations. To ensure the most effective contribution, Canada's Air Force must seek and maintain a high degree of interoperability with those joint and combined forces and be able to join or integrate into a joint, US or multinational force, anywhere in the world.

Air Force Operational Core Competencies

The original Air Command *Project 2020* documentation suggests that the future operational competency areas should be broken down into theatre surveillance, precision intervention, joint air, combat airfield support and force generation / strategic support. In the author's opinion, these same capabilities (competencies), in a slightly modified form, are still very germane to the future.

The first core competency, theatre surveillance is essentially a broad three-dimensional theatre surveillance mandate both within Canada and deployed in support of CF operations. This capability would have a very strong remote sensing and space based character.

Implicit in the second core competence, precision intervention, is the provision of air control combined with an ability to provide rapid, precise, short duration strikes in support of CF operations. The emphasis would be on a precision strike capability for controlled intervention in the air, on land or at sea.

¹⁰² *Leadmark: The Navy's Strategy for 2020* defines the operational competencies for the Navy and then lays out the desirable operational characteristics and capabilities in specific detail.

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The third core competency, joint air, is defined as providing direct air support to land and naval forces in operations and for search and rescue and for other government departments in the domestic setting. The ultimate object is to do so as the Joint Enabler of joint and combined land and naval forces. Joint air should be confined to the provision of manned platforms only for tactical / strategic airlift and search and rescue. Unmanned technology may then allow other aspects of joint air support such as close-in surveillance and attack to also be provided.

The fourth core competency, a combat support capability is the essential support / resources required for globally deployed air operations. Air movement and airfield support echelons are essential elements of this combat support.

Underpinning all of the above capabilities would be the force generation elements including training establishments plus the military and civilian sustainment activities.

Air Force Personnel Core Competencies

In the author's opinion, the core competencies for our personnel should include professional and technological competence, cohesion and discipline. Three mutually supportive features must characterize the Air Force profession. Firstly, there must be clear competence in the overall performance of assigned tasks and services. Secondly, all Air Force personnel must each achieve a level of individual competence in the performance of those professional tasks and services. This personal competency must be achieved through education, training and experience. And finally, there must be a deep and abiding trust between those in the profession. Air Force professional service must be based on ethical principles, mutual confidence and understanding. The second competency, cohesion, implies that the personnel within the profession must act as one. This is the essence of Air Force teamwork. No member is more important than the team and it is through constant teamwork that the Air Force will succeed as a whole. Discipline is the final personnel competency, which must be inherent in all personnel. All members of the Air Force will face difficult problems in the 21st Century. They must understand the profession of which they are a vital part. This includes understanding the context in which they perform their duties. There is a fine line between being a part of a cohesive and responsive team that as part of its duties applies lethal force at the direction of the Canadian Government and being an educated individual who also has a right to question the democratic system under which we live. There is a need therefore to align personal needs with the values and requirements of the Air Force.

Operational / Expeditionary Characteristics

In the author's opinion, there are also some further operational characteristics, which will be key to Canada's future Air Force:

C4ISR. Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) are the central elements of both today's and the future Air Force. Indeed, this same aspect is key to both the Navy and the Army.

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Having a common operating picture to share and exploit between the services is absolutely necessary. Arguably because of its strengths in each of these areas, the Air Force is well positioned to provide crucial elements of this common operating picture. Information derived from space assets will be central to this capability and data fusion will be critical. Again, using its strengths, the Air Force needs to focus on the ISR and data fusion portions of this overarching capability. Another overarching capability, which needs to be explicitly stated, is that of information warfare. In the author's opinion, this capability in all its forms including information collection, fusion, protection and intervention along with associated aspects such as electronic warfare needs to be a central strength of the Air Force.

Expeditionary. Most importantly, with the exception of force generation, each of the above competencies needs to be expeditionary in character.

Rapid Deployability. Rapid deployability should be another requirement for virtually all Air Force operational equipment. A primary limitation to Air Force fleets has been the footprint and "maintenance / logistics tail" required to operate the equipment when deployed. During the Cold War, the Air Force relied heavily on host nation support concept to offset these demands. For demographic reasons, the Air Force also needs to find ways to minimize its personnel footprint in every aspect; this includes reducing operational and support crews to the maximum extent possible through automation or by other means. In the future, a built-in ability to self-deploy with the absolute minimum of footprint needs to be a goal. Similarly, interoperability particularly with the US and other major allies will continue to be a highly desirable characteristic.

Multi-role use. The first characteristic, which should be sought for all equipment, platforms and even concepts, is multi-role use. Virtually, every aircraft platform that the CF has acquired in the past 20 years has been used in a multi-role capacity in ways that the original equipment manufacturers never envisaged. Unfortunately, this usage has then further complicated the sustainment required. Technology in the future will allow multi-role use for virtually all types of equipment and platforms whether ground, air or space based. Multi-role use must therefore be embraced but also appropriately catered to in the acquisition, engineering and support structures. A by-product of continued multi-role philosophy is the possibility of further fleet rationalization. During the 1990s, fleet rationalization was a goal of the Air Force in order to assist with reductions in training, support and logistic costs. This goal needs to continue.

Force Multiplier use. Force multipliers are another key characteristic. Force multipliers typically include capabilities such as air-to-air refueling, night vision, electronic warfare, data-link, all weather sensor technology and other specialist technology areas. The Air Force needs to ensure that such force multiplier characteristics are sought after, consistently provided and adequately leveraged.

Self-defence capability. A self-defence capability is an inherent characteristic that needs to be incorporated in all operational platforms whether manned or unmanned.

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Self-defence includes all forms of passive and active suites including inherent design characteristics such as stealth, emission control, etc.

VTOL/ STOL. In terms of airborne platforms, the debate as to whether vertical take-off and landing (VTOL) or short take-off and landing (STOL) abilities will need to be carefully considered in terms of the tradeoffs required such as cost, weight, complexity and performance. Presumably, as technology continues to mature, VTOL/STOL abilities will become increasingly desirable in each and every major operational platform.

Sustainability. Sustainability is the “achilles heel” for all Air Force equipment. The Air Force has survived the 1990s by operating reduced fleets while consuming stocks and cannibalizing platforms acquired for much larger fleets of equipment and also by pushing a substantial “bow-wave” of sustainment requirements. The USAF has resorted to rolling upgrades to deal with some of the same sustainability challenges. The Royal Air Force has gone further by planning and financing initial obsolescence and upgrade requirements within the initial capital acquisition program. A combination of these approaches combined with life cycle design forecasting and management improvements, needs to be considered for all Air Force equipment.

Focused Logistics & Maintenance. Once any equipment has been introduced, we will then need to develop a focused maintenance and logistics program in concert with industry suppliers. While this sounds easy, in practice our maintenance programs tend to be over intensive in order to compensate for intensive use that CF equipment experiences. Similarly, the logistics support has never adequately matched the consumption rates in key areas. Given our heavy reliance on contractor support, which has also been steadily consolidated, the Air Force needs to consider the re-establishment of an in-house third line maintenance and logistic capability to serve as buffer in the event of operational surges, poor contractor performance and/or other interruptions in service support.

Test & Evaluation. Lastly, a much under-looked aspect is that of test and evaluation. The Air Force relies heavily on having a suitable test and evaluation capability. It can be either a stumbling block or an enabler. The Air Force therefore needs to ensure that future test and evaluation attracts the “brightest and the best”. Moreover, test and evaluation needs to move beyond airborne platforms into the wider realms of Air Force operations combining aspects of simulation and wargaming technology from today’s approach.

Future Air Force Capability Requirements / Competency Components

In order to define its future requirements, the Air Force needs to start from a list of basic capability requirements and goals for all future systems. The following lists provide a possible starting point:

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Basic Capabilities / Competencies

- **C4ISR**
 - Multi-dimensional surveillance and reconnaissance ability.
 - Automated detection, localization, tracking and targeting ability.
 - Integrated ISR capability with automated development of a fused Common Operating Picture (COP).
 - Transparent and seamless transfer medium making use of global coverage from fixed and deployable C4ISR systems.
 - Ready access to military and civilian sources of intelligence, information and communications.
 - Interoperable C4ISR system (joint and combined).
 - Open architecture design and growth potential for C4ISR equipment.
 - Integral, independent national strategic level C4ISR system based on global coverage from fixed and deployable (interoperable) systems.
 - Real time connectivity at all levels (strategic, operational and tactical).
 - Interference resistant, multi-access and multi-level security systems.
 - Appropriate doctrine and highly trained personnel for collection, collation, analysis and distribution of ISR

- **Operational Capabilities for Theatre Surveillance**
 - All weather, day/night ability.
 - Stand-off, remote relay, real time surveillance ability.
 - Early and effective detection
 - Rapid response ability.
 - Self-defence ability - Multi-dimensional — to provide defence from air, surface, land-based threats and electromagnetic threats. Incorporated passive self-defence systems to reduce probability of detection and acquisition: stealth design, emission suppression systems.
 - Multiple automated systems, incorporating sophisticated decision support systems, integrated to work seamlessly in a multi-dimensional environment.
 - Platforms designed to sustain and minimise battle damage. Incorporated survivability systems: NBCW systems, fire fighting systems, damage control systems, redundancy and survivability of vital equipment and systems.
 - Protection of information systems through encryption, anti-jam and anti-virus abilities.
 - Over land / sea capability.
 - Interoperable for joint and combined operations

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- Capable of conducting C2 for assigned air units (including combined assets)
- **Operational Capabilities for Precision Intervention**
 - All weather, day/night ability.
 - Rapid response ability.
 - Self-defence ability - Multi-dimensional — to provide defence from air, surface, land-based threats and electromagnetic threats.
 - Incorporated passive self-defence systems to reduce probability of detection and acquisition: stealth design, emission suppression systems. Capable of providing defence against kinetic, electronic, electro-optical, acoustic, EMP, nuclear, biological, chemical or information attacks.
 - Multiple automated systems, incorporating sophisticated decision support systems, integrated to work seamlessly in a multi-dimensional environment.
 - Platforms designed to sustain and minimise battle damage. Incorporated survivability systems: NBCW systems, fire fighting systems, damage control systems, redundancy and survivability of vital equipment and systems.
 - Platforms design for VTOL / STOL where possible
 - Protection of information systems through encryption, anti-jam and anti-virus abilities.
 - Stand-off attack ability - Lethal hard kill systems to engage and defeat attacking weapons and weapon delivery platforms with speed, range and precision.
 - Capable of long range detection, localisation, tracking and engagement of multiple targets (range and precision).
 - Capable of sustained presence
 - Fused, multi-sensor picture with automated evaluation and response systems (speed).
 - Protection of information systems through encryption, anti-jam and anti-virus abilities
 - Over land / sea capability.
 - Interoperable for joint and combined operations
 - Capable of conducting C2 for assigned air units (including combined assets)
- **Operational Capabilities for Joint Air**
 - Rapid availability
 - Sufficient force structure to support limited lift requirements
 - Ability to carry “out-sized” equipment.
 - Able to operate in an austere environment
 - Reconfigurable for operations other than airlift.
 - All weather, day/night ability.
 - Stand-off, remote relay, real time surveillance ability.

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- Early and effective detection and reaction ability
- Rapid response ability.
- Self-defence ability - Multi-dimensional — to provide defence from air, surface, land-based threats and electromagnetic threats.
- Incorporated passive self-defence systems to reduce probability of detection and acquisition: stealth design, emission suppression systems. Capable of providing defence against kinetic, electronic, electro-optical, acoustic, EMP, nuclear, biological, chemical or information attacks.
- Multiple automated systems, incorporating sophisticated decision support systems, integrated to work seamlessly in a multi-dimensional environment.
- Platforms designed to sustain and minimise battle damage. Incorporated survivability systems: NBCW systems, fire fighting systems, damage control systems, redundancy and survivability of vital equipment and systems.
- Platforms design for VTOL / STOL where possible
- Protection of information systems through encryption, anti-jam and anti-virus abilities.

- **Operational Capabilities for Combat Support**
 - Rapid response / availability
 - Sufficient force structure to support deployed ops
 - All weather, day/night ability.
 - Able to operate in an austere environment Able to operate in moderately adverse environment conditions
 - Self-defence ability to provide defence from air, surface, land-based threats and electromagnetic threats.
- **Force Generation (Resource Acquisition)**
 - Innovative HR programs:
 - Focused recruiting program directed at highly qualified personnel.
 - Rewarding career of choice.
 - Growth opportunities for personnel — training, education, employment.
 - Personnel training:
 - First-rate basic and advanced training.
 - Leading edge doctrine — system use, operational concepts.
 - Continued development of national military education and training institutions.
 - Interaction with allied training and higher educational institutions.
 - Equipment / Platforms:
 - Improved acquisition process.
 - System commonality wherever possible — CF wide.

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- Interoperable — joint and combined (particularity with US).
 - Highly automated systems and platforms, with a focus on decision support technology.
 - Technological versatility.
 - Open architecture.
 - Designed to allow for frequent upgrading.
 - Robust design
 - ◁ Capable of employment in diverse and harsh environmental conditions.
 - ◁ Capable of continuing operations while sustaining battle damage.
 - Capable of exploiting emerging technologies.
 - Reduced personnel requirements wherever possible.
- **Sustainment (Resource Maintenance)**
 - A national third-line repair and maintenance facility capable of upgrading and maintenance of major equipment.
 - National main operating bases.
 - Sufficient force structure to support continuous existence of deployed air assets — 4:1 ratio to allow for rotation of platforms for routine maintenance and upgrades.
 - Personnel strength sufficient to allow for training, education and non-operational rotation (QOL, QOWL) while maintaining operational units at optimal personnel strength.
 - High level of medical, dental, and spiritual and family support to personnel.
 - Focused retention plan to protect tactical and technical effectiveness of the Air Force.
 - **Sustainment (Operational)**
 - A replenishment capability:
 - Provision of fuel, munitions and consumable goods (stores and parts).
 - Second line maintenance for air resources.
 - Provision of appropriate level of medical and dental support.
 - Interoperable for combined operations (principally with US and major allies).
 - In theatre support:
 - Negotiated HNS where possible.
 - Rapid establishment of Forward Logistic Sites / Advance Logistic Support Sites.
 - Provision of limited support to joint forces.

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- **Tailored Capabilities for Operations Other Than War (OOTW)**
 - No detraction from combat capability.
 - Only be acquired for situations that can be expected or are directed to occur.
 - Contribute significantly beyond what normal military capabilities can provide effectively in a given situation.
 - Capability not available within an Other Government Department