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THE EMERGENCE OF A “DOCTRINAL CULTURE”

WITHIN THE
CANADIAN AIR FORCE:
WHERE IT CAME FROM,
WHERE IT'S AT AND
WHERE TO FROM HERE?



**PART 2: Towards a Doctrinal Culture
within the Canadian Air Force**

By Aaron P. Jackson

INTRODUCTION

This is the second of two articles that examine the origin, evolution and future potential of the recent emergence of a tentative “doctrinal culture” within the Canadian Air Force. In the first article it was postulated that the culture of the Canadian Air Force, like most other Western air forces, has not been traditionally characterised by a tendency towards theoretical or doctrinal development. Instead, a strong oral (rather than written) culture of passing lessons from senior to junior officers evolved early in the history of the Canadian Air Force and subsequently became entrenched. This was accompanied by a tendency to pragmatically focus on contemporary issues, to the detriment of broader theoretical and doctrinal development.¹

Recently, however, there have been some indications that the Canadian Air Force is beginning to shift away from this cultural paradigm, and that a tentative culture of doctrinal development is emerging to take its place. Drawing on the background provided in Part 1, this article examines the Canadian Air Force’s attempts to develop doctrine since the formation of Air Command in 1975. This examination is undertaken in three sections. First, limited doctrine development between 1975 and 1989 is briefly discussed. Second, doctrine development during the 1990s is analysed in relation to the international rejuvenation of air power theory that occurred during that decade. Third, the apparent emergence of a tentative doctrinal culture within the Canadian Air Force during the past decade is considered. In conclusion, the future potential of this tentative culture is addressed, and some challenges that remain to be overcome are highlighted.

LIMITED DOCTRINE DEVELOPMENT, 1975-1989

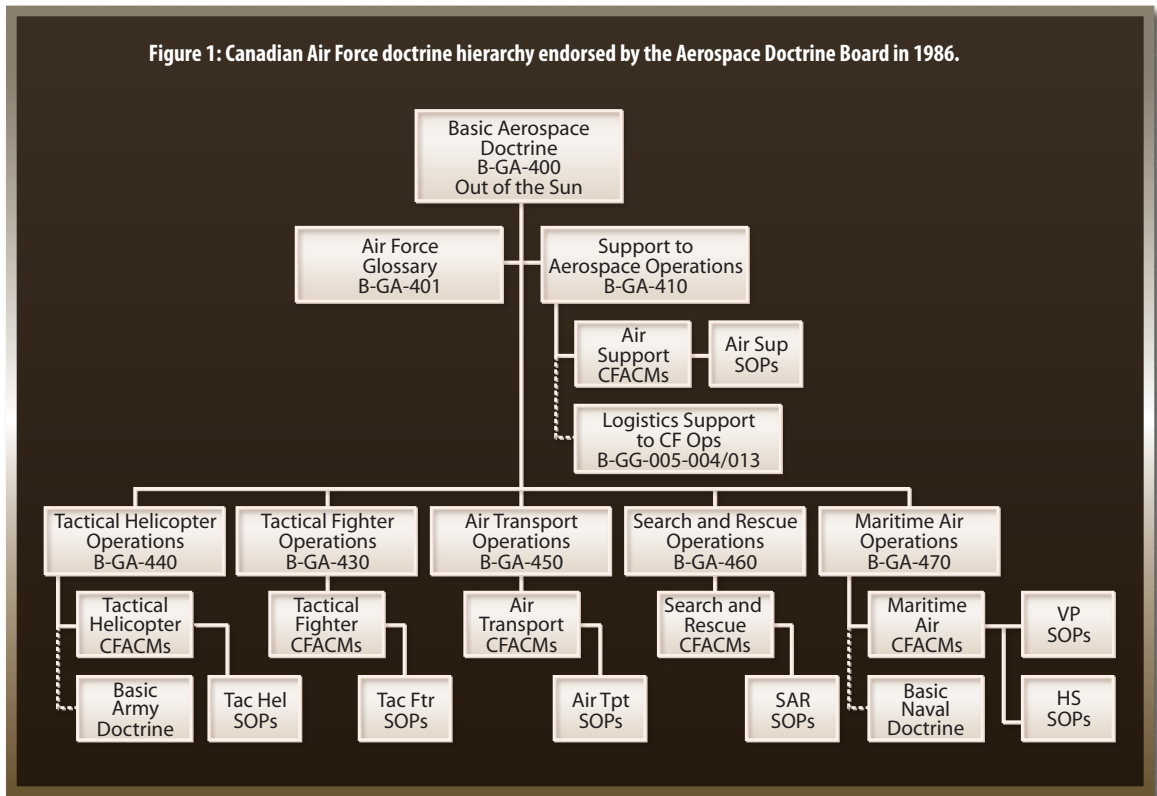
The first part of this article established that by the close of the Second World War the oral dissemination of ideas between officers had become a significant feature of Canadian Air Force culture. This was accompanied by

a tendency to eschew written theory and doctrine and was perpetuated during the cold war by several major events. The first of these was the Royal Canadian Air Force’s (RCAF’s) adoption of Royal Air Force (RAF) and United States Air Force (USAF) tactical and operational doctrine (subject to its existence). Not only did this constitute a disincentive to the development of an independent body of Canadian Air Force theory and doctrine, it arguably served to narrow the focus of many officers to operational and tactical issues, to the detriment of strategic thinking.

The second major event was the unification of the Canadian Forces (CF) in 1968, which dismantled the RCAF and divided its former units between the CF’s six new “commands” according to their primary function. This division had the effect of heightening the prominence of the Canadian Air Force’s capability-based “communities,”² something that has had ongoing ramifications for doctrine development within the Canadian Air Force ever since. In the short-term, unification eliminated the branch of the CF that had previously been responsible for the development of air power doctrine, without giving any indication as to which organisation would replace it.

The amalgamation of Air Defence and Air Transport Commands into Air Command in 1975 provided a foundation upon which a post-unification Canadian Air Force culture could be rebuilt.³ On its inauguration, the new command inherited a substantial doctrinal void. Since unification, virtually no air power doctrine, including that designed to guide the tactical level of conflict, had been produced by the CF. Despite the significance of this dearth, doctrine development progressed slowly, no doubt due—at least in part—to an ongoing cultural tendency to eschew written theory and doctrine. The first noteworthy air power doctrine manual produced after unification, *Conduct of Air Operations*, was not released until June 1981.⁴ Even this was only an updated edition of a pre-1968 publication, and its scope and utility were severely limited.⁵

Figure 1: Canadian Air Force doctrine hierarchy endorsed by the Aerospace Doctrine Board in 1986.



In 1984, Lieutenant-General Paul Manson, then Commander Air Command, convened a conference to address “the fragmented state of aerospace doctrine.”⁶ The outcome of the conference was the establishment of an Aerospace Doctrine Board (ADB) in 1986, which quickly endorsed a new doctrine hierarchy (see Figure 1).⁷ From the outset, the hierarchy included a keystone doctrine manual,⁸ which was published in 1989 under the title *Basic Aerospace Doctrine*.⁹

Although the production of *Basic Aerospace Doctrine* had the potential to constitute a significant step towards redressing the Canadian Air Force’s institutional apathy towards written theory and doctrine, this opportunity was ultimately lost for several reasons. First, despite the inclusion of brief explanations of military doctrine, “Canadian strategic doctrine” (strategic policy), the principles of war, and the relationship between war and the nation,¹⁰ the

manual was not placed on a sound theoretical footing. Second, distribution of the manual appears to have been limited to within the CF (severely hampering its potential to initiate a broader theoretical debate about Canadian air power), even though it is unlikely that it ever had a “restricted” status. Third, the entire doctrine hierarchy, including *Basic Aerospace Doctrine*, failed to sufficiently address strategic-level considerations, “in particular space and strategic aerospace defence.”¹¹

Shortly after the release of *Basic Aerospace Doctrine*, the Canadian Air Force’s entire doctrine hierarchy fell into a state of disrepair. This was mainly due to the lack of manpower and expertise available to maintain the hierarchy’s currency on an ongoing basis,¹² although this was most likely compounded by additional factors such as a lack of sound Canadian strategic policy guidance during the period and the Air Force’s existing cultural tendency to eschew

written doctrine. Canadian Air Force doctrine development subsequently waned during the early 1990s.

THE 1990S: “THE EMANCIPATION OF AIR POWER”

Shortly after the release of *Basic Aerospace Doctrine*, the 1991 Gulf War led to the widespread re-emergence of the theoretical development of air power, an occurrence that would later be described by Markus Mader as “the emancipation of air power.”¹³ Regarding the Gulf War itself, Mader went on to assert that:

The contribution of the allied air forces to the campaign proved to be more than a supporting role and was in fact interpreted by many as a war-winning role. Airmen were henceforth considered to be equal partners to their military and maritime counterparts in the all-arms high-intensity warfare. Finally, it appeared, military aviation could apply its technological edge to a degree which proved decisive, and live up to early 20th century imaginations.¹⁴

Largely responsible for the subsequent theoretical rejuvenation of air power was the widespread use of precision-guided munitions in both tactical and strategic roles. The use of these munitions was also a major contributing factor to the Revolution in Military Affairs (RMA) debate that took place during the early and mid 1990s.¹⁵ Although this debate focused primarily on technological advances and whether or not they had brought about a radical departure from previous modes of warfare, much of it was nonetheless related to the application of air power.¹⁶

Within Western air forces, this emancipation resulted in an increased willingness on the part of officers to discuss in writing what it was they did, and more importantly, how and why they did it. Against this backdrop, several air forces approached doctrine development

with a fresh perspective, particularly in instances where doctrine was designed to provide overarching guidance at the strategic level.¹⁷

Yet doctrine development within the Canadian Air Force lagged a few years behind developments within allied air forces, such as the USAF and RAF (which had released new keystone doctrine manuals in 1992 and 1993 respectively).¹⁸ One of the key reasons for this was circumstantial. As the Gulf War was taking place in the Middle East, the Soviet Union was in the final stages of collapse. As these events combined to trigger a period of global strategic uncertainty, the Canadian Air Force suffered particularly acutely from a lack of strategic policy guidance.

Even after Canada’s 1994 *Defence White Paper* finally provided some respite from the strategic uncertainty, the Air Force continued to suffer from a declining budgetary allocation. Although the White Paper had established a requirement for “[t]he retention of multi-purpose, combat capable forces,”¹⁹ it had also shifted the operational emphasis towards the army. As a result of this new emphasis, the Canadian Air Force’s budget fell from C\$3 billion in 1994 to C\$2.2 billion in 1998.²⁰

Furthermore, it is likely that the Canadian Air Force’s doctrinal lag behind other Western air forces was compounded by several of the factors that had historically resulted in the organisation’s cultural tendency to eschew to written theory and doctrine. In particular, the close cultural link between the Canadian Air Force and its American counterpart most probably led to a continued inclination on the part of Canadian Air Force officers to refer to USAF doctrine developments in preference to undertaking doctrine development domestically.²¹

Despite these factors, the eventual catalyst for the Canadian Air Force’s production of a new keystone doctrine manual was a meeting of the ADB in October 1994, at which it was determined that a replacement for *Basic Aerospace*

Doctrine was required. This was because *Basic Aerospace Doctrine* “lacked consistency and balance, perpetuated ‘stove piping,’ and did not reflect current thinking about air power.”²² Although this determination was made in 1994, it took almost three years for a replacement publication to be developed. Furthermore, when production finally did occur, it was rushed so that something could be released in time for the 1997 Aerospace Power Conference. The result, *Out of the Sun: Aerospace Doctrine for the Canadian Forces*” was based primarily upon a précis on air power theory developed at the Canadian Forces College (CFC) in Toronto.²³

From the outset, *Out of the Sun* encountered a multitude of problems that ultimately led to its failure. The first of these was that (as had been the case with *Basic Aerospace Doctrine*) there was no effective authority to distribute, publicise, update or maintain it.²⁴ Abetting this problem was the unique format of *Out of the Sun*, which was originally released as a unilingual publication without a National Defence Index of Documentation (NDID) number, meaning that it could not be traced or ordered through official channels.²⁵

The second problem *Out of the Sun* encountered was that its content was intellectually questionable. In particular, its discussion about the spectrum of air force operations preceded under three headings (air combat, supporting air and sustainment operations),²⁶ the accompanying definitions of which were often simplistic and occasionally contradictory.²⁷ As a result, *Out of the Sun* failed to explain the rationale underlying the existence of Canada’s Air Force. As Paul Mitchell noted, “*Out of the Sun* tells one how the air force seeks to accomplish its missions, but not why, nor more importantly, why this is critical to Canada as a nation.”²⁸ Like *Basic Aerospace Doctrine* before it, *Out of the Sun* had not been placed on a sound theoretical footing.

Finally, *Out of the Sun* fell victim to the strong influence capability-based communities had within the Canadian Air Force. Indeed,

the content of *Out of the Sun* aroused the objection of elements within almost all of the air force’s capability-based communities. As a result, the majority of the Air Force itself failed to embrace the manual and its effect, if it had one, is barely noticeable.²⁹ Following the 1997 Aerospace Power Conference, *Out of the Sun* appears to have been unofficially relegated to use as an instruction manual at the CFC. As Paul Johnston asserted, “there is scant evidence that it is ever used or referred to by anyone actually applying air power.”³⁰

THE RECENT EMERGENCE OF A TENTATIVE DOCTRINAL CULTURE

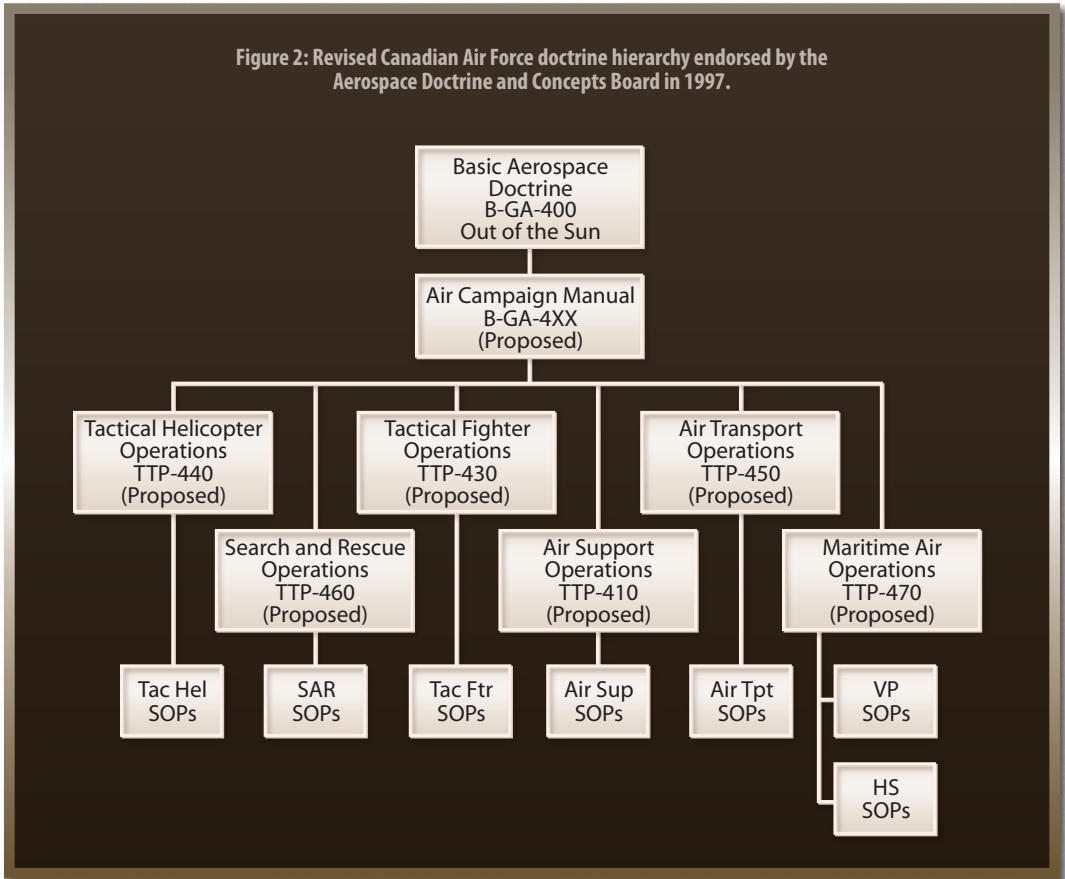
By the close of the 1990s the Canadian Air Force had produced two keystone doctrine manuals in the span of a decade, and both had ultimately failed to have much (if any) impact. Underlying these dual failures were three common factors. The first was the failure to base the content of the manuals upon a sound theoretical framework and second was inadequate distribution. When these factors combined with the third factor—the air force’s longstanding institutional apathy towards written theory and doctrine—the failure of both doctrine manuals can be seen as unsurprising.

Following the release of *Out of the Sun*, Canadian Air Force doctrine development again waned. A restructuring of air force headquarters necessitated changes to the ADB, which was renamed the Air Doctrine and Concepts Board (ADCB) in 1997. At its inaugural meeting, the ADCB endorsed a new doctrine hierarchy to replace the hierarchy that had been endorsed in 1986 (see Figure 2).³¹

The progress of events thereafter was later summarised by Colonel John Westrop:

The inaugural session of the ADCB was convened at NDHQ [National Defence Headquarters] on 29 Nov 97, and the subsequent (and final) session took place

Figure 2: Revised Canadian Air Force doctrine hierarchy endorsed by the Aerospace Doctrine and Concepts Board in 1997.

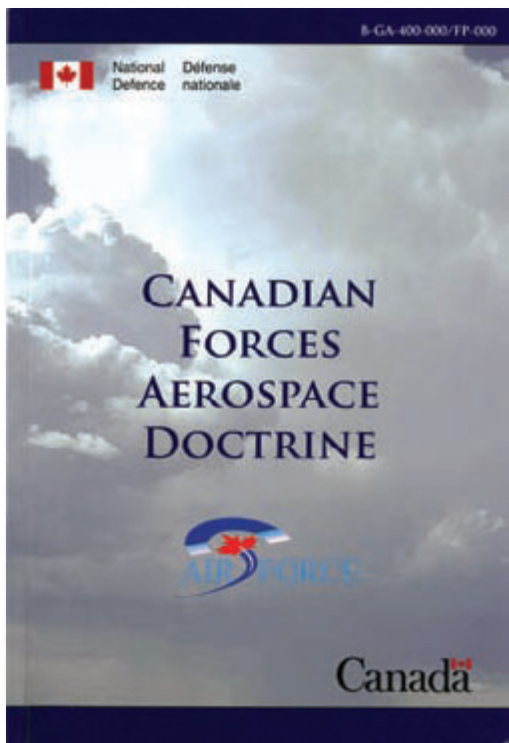


on 26 May 98. Since then there has been little activity by the ADCB; in particular there has been no progress on developing the “new” hierarchy of aerospace doctrine manuals. Instead, sporadic action has taken place to update some doctrine publications in the “old” hierarchy. With minor exceptions, since the reconfiguration of the ADB into the ADCB, the coherent promulgation of CF aerospace doctrine has virtually ceased.³²

In December 2000 this situation was formerly acknowledged by the Air Force Development Committee, which proposed a study be conducted to determine a course of action for rectifying the absence of up-to-date air force doctrine. In August 2001, an “Aerospace Doctrine Study” commenced under the direction of Colonel Westrop.³³

The Study’s final report, dated April 30, 2002, made several recommendations. Key among these were the creation of an “Aerospace Doctrine Authority” (ADA) and an “aerospace doctrine system framework” to allow doctrine to be developed and disseminated, and also to undertake the “research, education, lessons learned, experimentation and simulation, and possibly history and heritage” functions associated with the development and application of doctrine.³⁴ To supplement this, it was also recommended that an Air Force publications centre be established and that the ADA be given a secondary role as the “CF Aerospace Warfare Authority,” in order to ensure it was operating from a position of authority when developing and disseminating doctrine.³⁵

By coincidence, the delivery of the final report of the Aerospace Doctrine Study



coincided with a crucial juncture in the air force's "transformation" program, which had commenced in 1999. As a result, the implementation of several of the study's recommendations subsequently became a central part of the program.

The catalyst for Air Force transformation was the June 1999 release of *Strategy 2020*,³⁶ which had been developed by the Department of National Defence (DND) to provide strategic guidance in the wake of numerous budget cuts that occurred during the late 1990s.³⁷ In 2000, the Air Force released a response to the strategy, titled *Vectors 2020: An Air Force Strategic Assessment*. Primarily, *Vectors 2020* provided "a series of signposts about air operations in 2020 so as to assist us in developing the air force of the future."³⁸

Over the following few years, air force transformation was conceptually advanced by the release of two further documents. The first of these was *The Aerospace Capability Framework*, which established a comprehensive

short-to-mid term agenda designed to provide more detail about the early steps in the transformation process.³⁹ The second document was *Strategic Vectors: The Air Force Transformation Vision*. This document established eight "vectors," which focused on a broad variety of operational, personnel and public relations priorities.⁴⁰

Owing to the timing of the delivery of the Aerospace Doctrine Study's final report, several of its recommendations were featured as a central component of the transformation agenda established within both of these documents. Most importantly, *The Aerospace Capability Framework* directed the establishment of a Canadian Forces Aerospace Warfare Centre (CFAWC).⁴¹ The establishment of the Centre was also a key part of the fourth "vector" contained within *Strategic Vectors*.⁴² CFAWC was mandated to develop Canadian Air Force doctrine and distribute it, as well as conducting the related research, education, experimentation, simulation, lessons learned and conceptual development functions that had been identified as requirements by the Aerospace Doctrine Study.⁴³

Following its establishment in October 2005, CFAWC undertook its educational and conceptual development functions through the commission of studies, and—more prominently—through the establishment of *The Canadian Air Force Journal*. Both of these activities have constituted important steps towards finally establishing a written culture within the Air Force. The primary responsibility of CFAWC, however, is the production of doctrine. Work on a new keystone manual commenced immediately after the establishment of the Centre, leading to the release of *Canadian Forces Aerospace Doctrine* in early 2007.⁴⁴

Importantly, this new manual does not appear to suffer from the same shortfalls as its two predecessors. Conceptually, *Canadian Forces Aerospace Doctrine's* major contribution occurred in its fifth chapter, which enunciated "the functions of Canada's Air Force."⁴⁵ The five functions—sense, shape, move, sustain,

command—were derived from the Army's combat functions, which have constituted a fundamental component of the evolution of Canadian army conceptual thinking since 2001.⁴⁶

The decision to adapt an Army concept for use within Air Force doctrine probably came about for two reasons. First, it was felt that the concepts traditionally included in Air Force doctrine were “too inflexible.” Early in the development process, the writing team was ordered to instead develop a functions-based approach for inclusion in the new manual. After a brief investigation, Army doctrine was selected as the “blueprint” for this development because Army conceptual development was perceived as comparatively advanced.⁴⁷ Second, it has been asserted that there was a growing feeling within the Air Force during the early 2000s that “the Army and Navy appears [sic] to have been able to make a politically better case for their service than the Air Force has.”⁴⁸ The adaptation of an Army concept for use within Air Force doctrine may also have been part of an attempt to close this perceived gap.

Regardless of the reasons why the Air Force adapted an Army concept for inclusion within its own doctrine, a significant benefit of the development of the five functions is that it allowed the doctrine's discussion about Canadian air power to be located within a sound theoretical framework. Furthermore, the Air Force appears to have been able to successfully tie the roles of its various communities into this broader conceptual model, thus avoiding the problem of acceptance that was encountered following the release of *Out of the Sun*.

Steps have also been taken towards addressing the other problems previously encountered by Canadian Air Force doctrine. Unlike previous manuals, the release of *Canadian Forces Aerospace Doctrine* was widely publicised. Furthermore, distribution was not limited to within the Air Force itself and a link to a publicly-available online version has been prominently placed on CFAWC's homepage.⁴⁹

Finally, the establishment of CFAWC and the subsequent publication of *The Canadian Air Force Journal* in particular have constituted significant moves towards establishing a broader culture of writing within the Canadian Air Force. In the longer term, the eventual success or failure of this attempt to generate cultural change within the Air Force is likely to be the most significant determinant of the ultimate success or failure of *Canadian Forces Aerospace Doctrine*.

CONCLUSION

Although it is still too early to determine whether *Canadian Forces Aerospace Doctrine* will ultimately be successful, from the outset the manual has been given a better chance than its predecessors. This is mainly because steps have been taken to address the problems that led to the failure of previous doctrine manuals.

In the longer term, other initiatives such as the establishment of CFAWC and the subsequent production of publications such as *The Canadian Air Force Journal* will also play a role in determining the extent of the doctrine's success. Together, *Canadian Forces Aerospace Doctrine* and these other recent initiatives constitute an important step towards reversing the historic tendency of the Canadian Air Force to neglect written theories and doctrines of air power. The nature and timing of these other initiatives also suggests that a tentative doctrinal culture is emerging within the Canadian Air Force at the institutional level. Although it appears that this emergence began with the conduct of the Aerospace Doctrine Study during the early 2000s, this has only become apparent with the benefit of hindsight.

At the time of writing this article, it remains to be seen whether this apparent cultural shift will be transient or enduring. Importantly, there are still several things that need to occur if the Canadian Air Force wants to ensure the permanency of what appears to be a fledgling doctrinal culture. These requirements mainly relate to the need to generate wider support

for recent initiatives. The establishment of CFAWC and the publication of a new doctrine manual indicate institutional level reforms; the need now is to ensure that the generation of ongoing support for these reforms becomes prevalent throughout the Air Force at a “grass roots” level.

First, there is a need to expand efforts to generate (then perpetuate) a culture characterised by air power theoretical development and the written dissemination of ideas. While the publication of *The Canadian Air Force Journal* has been a great start, it has yet to reach its full potential. With a few notable exceptions, substantial articles appearing in previous editions have tended to focus on technological, tactical or operational issues, or alternatively have been authored by personnel posted to CFAWC. While there is nothing wrong with this (indeed, it is an excellent start), the generation of a broader theoretical debate about the role of air power in the Canadian context could constitute a large step towards engendering a lasting written culture conducive to doctrinal success.

Second, despite its comparatively wide distribution and online availability, the release of *Canadian Forces Aerospace Doctrine* has not been followed by a written, public debate about the relevance or utility of its content.⁵⁰ Such a debate would constitute an important mechanism for improving the content of future editions, as well as for ensuring that they continue to be located within a sound theoretical framework. Furthermore, wide distribution does not guarantee that the doctrine will be widely read. Regarding this potential problem, the Canadian Air Force may benefit from the Royal Australian Air Force’s experience. In that air force, new keystone doctrine manuals are usually launched at high-profile events such as air shows (raising media and public awareness) and their internal distribution is accompanied by a Chief of Air Force order stating that all personnel are to read them.⁵¹

Finally, now that the Canadian Air Force has a viable keystone doctrine manual, it must ensure that updated editions are regularly produced, in order to maintain the relevance of its doctrine in view of the evolution of Canadian national strategy and changes in the nature of air force operations. In the past, the release of Canadian Air Force doctrine manuals has been followed by long periods of inactivity. Were this to occur again, it would likely contribute to the loss of the Air Force’s tentative doctrinal culture. Fortunately, the establishment of CFAWC as a doctrine development “centre of excellence” indicates that such a period of doctrinal inactivity is less likely to occur again. Indeed, the Canadian Air Force’s recent undertakings have already put the organisation in a good position to transform its tentative doctrinal culture into something more permanent. Whether this opportunity is taken, however, remains to be seen. ■

Editor’s Note: In editing this article, the author’s Australian spelling conventions have been maintained.

List of Abbreviations

ADA	Aerospace Doctrine Authority
ADB	Aerospace Doctrine Board
ADCB	Air Doctrine and Concepts Board
CF	Canadian Forces
CFAWC	Canadian Forces Aerospace Warfare Centre
CFC	Canadian Forces College
DND	Department of National Defence
NDHQ	National Defence Headquarters
NDID	National Defence Index of Documentation
RAF	Royal Air Force
RCAF	Royal Canadian Air Force
RMA	Revolution in Military Affairs
USAF	United States Air Force

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Notes

1. Aaron P. Jackson, "The Emergence of a 'Doctrinal Culture' within the Canadian Air Force: Where it Came From, Where it's at and Where to From Here? Part 1: Doctrine and Canadian Air Force Culture Prior to the End of the Cold War," *The Canadian Air Force Journal*, Vol. 2, No. 3 (Summer 2009), 38-46. Available online at http://www.airforce.forces.gc.ca/CFAWC/eLibrary/Journal/Vol2-2009/Iss3-Summer_e.asp (accessed October 19, 2009).
2. For a detailed discussion about the nature of these communities, see Allan English and John Westrop, *Canadian Air Force Leadership and Command: The Human Dimension of Expeditionary Air Force Operations* (Trenton: Canadian Forces Aerospace Warfare Centre Production Section, 2007), 156-227.
3. Desmond Morton, *A Military History of Canada: From Champlain to Kosovo* (Toronto: McClelland & Stewart, 1999), 261.
4. Canada, Air Force, *B-GA-283-000/FP-000 Conduct of Air Operations* (Ottawa: Department of National Defence, 1 June 1981).
5. John Westrop (Chair), "The Evolution of CF Aerospace Doctrine," Annex A to: *Aerospace Doctrine Study: Final Report* (Ottawa: Canadian Air Force, 30 April 1992), 39.
6. *Ibid.*, 39.
7. Westrop, "The Evolution of CF Aerospace Doctrine", 40.
8. "Keystone" is the term used to denote the highest (or sometimes the first) doctrine manual in a series or hierarchy. Usually, the keystone manual contains overarching principles designed to provide philosophical guidance for the conduct of operations. Discussion within other doctrine manuals within the hierarchy, which may be narrower in focus, is usually required to align with discussion within the keystone manual.
9. Canada, Air Force, *B-GA-400-000/FP-000 Basic Aerospace Doctrine* (Ottawa: Department of National Defence, 30 June 1989). This is the same title given to USAF military-strategic level doctrine, indicating the prominent influence this allied air force had on Canadian air force doctrinal thinking during this period.
10. *Ibid.*, chapters 1-3.
11. Westrop, "The Evolution of CF Aerospace Doctrine," 40.
12. *Ibid.*, 41.
13. Markus Mader, *In Pursuit of Conceptual Excellence: The Evolution of British Military-Strategic Doctrine in the Post-Cold War Era, 1989-2002*, Studies in Contemporary History and Security Policy No. 13, (Bern: Peter Lang, 2004), 104.
14. *Ibid.*, 117.
15. A "revolution in military affairs" has been defined as "a paradigm shift in the nature and conduct of military operations," in this case brought about by technological advances since the end of the Vietnam War and evident initially during the 1991 Gulf War. The concept was highly popular during the 1990s, although it has since been brought into doubt as a result of the nature of the post-September 11, 2001 wars in Afghanistan and Iraq. Examples of the work produced as a part of RMA debate include: Andrew Richter, *The Revolution in Military Affairs and its Impact on Canada: The Challenge and the Consequences* (Vancouver: University of British Columbia Institute of International Relations Working Paper No. 28, March 1999); R. Hindley, *Past Revolutions, Future Transformations: What can the History of Revolutions in Military Affairs Tell Us About Transforming the US Military?* (Santa Monica: RAND Corporation, 1999); Alvin Toffler and Heidi Toffler, *War and Anti-War: Survival at the Dawn of the 21st Century* (Boston: Little, Brown & Co.), 1993; Eliot Cohen, "A Revolution in Warfare," *Foreign Affairs*, Vol. 75, No. 2 (March/April 1996), 37-54.

16. David Caddick, "Air Power and the Revolution in Military Affairs" in: Peter W. Gray (Ed.), *Air Power 21: Challenges for the New Century*, Defence Studies (Royal Air Force), (London: The Stationary Office, 2000), 41-67.

17. In the case of the RAF, for example, it has been argued that the role air power played in the Gulf War was the decisive factor in the subsequent decision to produce military strategic level doctrine. See Sebastian Cox and Sebastian Ritchie, "The Gulf War and UK Air Power Doctrine and Practice" in Cox & Gray (Eds.), *Air Power History*, 287-300.

18. Headquarters USAF, *Air Force Manual 1-1, Volume 1: Basic Aerospace Doctrine of the United States Air Force* (Washington DC: Department of the Air Force, March 1992); Headquarters USAF, *Air Force Manual 1-1, Volume 2: Basic Aerospace Doctrine of the United States Air Force* (Washington DC: Department of the Air Force, March 1992); Royal Air Force, *AP 3000 Air Power Doctrine*, (United Kingdom: Her Majesty's Stationary Office, 1993).

19. Department of National Defence, *1994 Defence White Paper* (Ottawa: Canadian Government Publishing Centre, 1994), 14.

20. Brereton Greenhous and Hugh A. Halliday, *Canada's Air Forces 1914-1999* (Montreal: Art Global, 1999), 156.

21. John Westrop (Chair), *Aerospace Doctrine Study: Final Report*, Ottawa: Canadian Air Force, 30 April 1992, p. iv.

22. Westrop, "The Evolution of CF Aerospace Doctrine," 41. Stovepiping is "the condition that exists when staff or support personnel forget that they are subordinate to a line commander," instead following instructions from higher-ups within the staff or support branch hierarchy. Richard Szafranski, "Desert Storm Lessons from the Rear," *Parameters*, Vol. 21, No. 4 (Winter 1991-2), 45. See also: Carl H. Builder, *The Icarus Syndrome: The Role of Air Power Theory in the Evolution and Fate of the US Air Force* (New Brunswick: Transaction Publishers, 1994), xiii-xix.

23. Paul Johnston, "Canopy Glint: Reflections on *Out of the Sun: Aerospace Doctrine for the Canadian Forces*" in: Douglas L. Erlandson and Allan English (Eds.) *Air Force Command and Control* (Winnipeg: Canadian Forces Training Material Production Centre, 2002), 83. The document on which *Out of the Sun* was based was titled *ACSP-1 Air Doctrine Manual*. Westrop, "The Evolution of CF Aerospace Doctrine," 41.

24. As will be discussed in the next section of this article, organisational changes made shortly after the publication of *Out of the Sun* resulted in the Aerospace Doctrine and Concepts Board being charged with the development, distribution and maintenance of the Canadian Air Force's doctrine hierarchy, including *Out of the Sun*. As will be seen, the Aerospace Doctrine and Concepts Board did not meet again after its second meeting, held in May 1998, this having the effect of leaving *Out of the Sun* without an organisation to distribute, publicise, update or maintain it. Westrop, 41-42.

25. Johnston, 84. At some point since its original release, *Out of the Sun* has been allocated an NDID number, as the version obtained by this author was labelled B-GA-400-000/AF-000.

26. Canadian Air Force, *B-GA-400-000/AF-000 Out of the Sun: Aerospace Doctrine for the Canadian Forces* (Ottawa: Department of National Defence, 20 July 1997), chapters 8-10.

27. Johnston, 84-85.

28. Paul Mitchell, "The Revolution in Military Affairs and the Canadian Air Force" in: David Rudd, Jim Hanson and Andre Beauregard (Eds.), *Air Power at the Turn of the Millennium* (Toronto: The Canadian Institute of Strategic Studies, 1999), 43.

29. This information was obtained during a series of interviews with Canadian Air Force officers, conducted in May 2007 and August 2008. Interview transcripts are on file with the author.

30. Johnston, 83.

31. Westrop, 41-42.

32. Westrop, v.

33. *Ibid.*, iv-v.

34. *Ibid.*, 32.

35. *Ibid.*, 32-34.

36. Department of National Defence, *Shaping the Future of the Canadian Forces: A Strategy for 2020* (June 1999), available online at http://www.vcds.forces.gc.ca/dgsp/00Native/rep-pub/dda/cosstrat/2020/Defence_Strategy_2020_Ver4_e.pdf (accessed September 10, 2007).

37. Department of National Defence, *Defence Strategy 2020: Formulating the DND/CF Statement of Strategy*, 2. Available online at http://www.vcds.forces.gc.ca/dgsp/00Native/rep-pub/dda/cosstrat/2020/Defence_Strategy_2020_Ver4_e.pdf (accessed September 10, 2007).
38. Canadian Air Force, *Vectors 2020: An Air Force Strategic Assessment* (Ottawa: Department of National Defence, 2000), 1.
39. Director General Air Force Development, *A-GA-007-000/AF-002 The Aerospace Capability Framework: A Guide to Transform and Develop Canada's Air Force* (Ottawa: Department of National Defence, 2003).
40. Canadian Air Force, *A-GA-007-000/AF-004 Strategic Vectors: The Air Force Transformation Vision*, (Ottawa: Department of National Defence, 2004), 44-52.
41. Director General Air Force Development, 64.
42. Canadian Air Force, *Strategic Vectors*, 48-49.
43. [No Author], *Canadian Forces Aerospace Warfare Centre Concept of Operations (Final)*, Canadian Air Force [No place of publication given], 7 June 2005.
44. Canadian Air Force, *B-GA-400-000/FP-000 Canadian Forces Aerospace Doctrine* (Trenton: Canadian Forces Aerospace Warfare Centre, 2007).
45. *Ibid.*, chapter 5.
46. The Army's five operational functions were originally promulgated in: [No Author], *Report No. 01/01: Future Army Capabilities* (Kingston: Directorate of Land Strategic Concepts, January 2001), chapters 3-8. An overview of recent Canadian Army conceptual development is provided in: Aaron P. Jackson, "Moving Beyond Manoeuvre: A Conceptual Coming-of-age for the Australian and Canadian Armies," *Australian Defence Force Journal*, No. 177 (November/December 2008), 85-100.
47. This information was obtained during a series of interviews with Canadian Air Force officers, conducted in May 2007 and August 2008. Interview transcripts are on file with the author.
48. J. L. Christian Carrier, *Transformation of the Canadian Forces: Is Aerospace Power Relevant?* (NSSC 5, Toronto: Canadian Forces College, June 2003), 20.
49. Canadian Air Force, *Canadian Forces Aerospace Warfare Centre*. Available online at http://www.airforce.forces.gc.ca/CFAWC/Index_e.asp (accessed April 20, 2009).
50. In contrast, the release in 1997 and 2001 of keystone doctrine manuals by the Canadian Navy was followed by periods of rigorous academic analysis and debate, which indicated a level of intellectual engagement with the doctrine by members of the Navy as well as the broader naval community. This level of academic and public engagement thus far appears to be missing from within both the Canadian Air Force and the Canadian air power community more broadly. Examples of the debate about Canadian Navy doctrine include: Jeremy R. Stocker, "Book Review: Adjusting Course: A Naval Strategy for Canada," *The Naval Review*, Vol. 86, No. 1 (January 1998), 79; Eric Grove, "Review of Adjusting Course: A Naval Strategy for Canada," *The Northern Mariner*, Vol. 8, No. 2 (April 1998), 134-135; Peter Haydon, "Adjusting Course: Some Observations," *Maritime Affairs*, Spring/Summer 1998, 23-26; Martin Shadwick, "The Leadmark Chronicles," *Canadian Military Journal*, Vol. 2, No. 3 (Autumn 2001), 75. A notable exception to the lack of public, academic analysis of Canadian Air Force doctrine is: Johnston, 83-97; it is a pity there are not more publications of this ilk.
51. This information was obtained during a series of interviews conducted with Royal Australian Air Force officers and civilian employees in August 2007. Interview transcripts on file with the author.