# Command and Control Implications for Canadian Forces Air Expeditionary Operations

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In recent years the study of command and control (C2) has been a prominent issue in the Canadian military community. Indeed, the work of a number of research scientists and academics, most notably Ross Pigeau, Carol McCann, Allan English and Brigadier General (retired) Joe Sharpe, on command and control issues have had a great impact on Canada's military forces. It is therefore no surprise that one of the focuses of this year's Canadian Forces College Air Symposium is on command and control of Air Expeditionary Forces.

Before going into any kind of detail regarding the command and control of Canada's Air Force in expeditionary operations, it is first necessary to clarify what is meant by the term "expeditionary." Gimblett has pointed out that technically any application of Canadian military force beyond Canada's territorial limits is, by definition, expeditionary.[1] The United States armed forces, on the other hand, as Thierry Gongora has noted, define an expedition as "a military operation by an armed force to accomplish a specific objective in a foreign country" and an expeditionary force as "an armed force organized to accomplish a specific objective in a foreign country."[2] For the purpose of this paper, the term expeditionary refers to a combination of both of the above definitions: the deployment of Canadian Forces' (CF) resources outside of Canadian territory into a foreign country or foreign territory for the purpose of accomplishing a specific objective.

Having defined the term expeditionary, this paper will focus on command and control issues concerning Canadian air expeditionary forces with the following assumptions in mind:

- Canada will never act alone in expeditionary operations; it will instead operate as a member of a multinational coalition.
- It is most likely that Canada will operate as a member of a coalition in which the United States is not only a part, but will most likely lead.
- Nevertheless, Canada's Air Force should also prepare for the possibility that it will operate in multinational coalitions in which the United States is *not* a member.
- Although war-fighting is the main role for which the CF prepares, it must also be recognized that it is by no means the only role for Canada's military.
- Command of Canada's air forces in expeditionary operations will remain with Canada. This means that targeting will also remain a Canadian decision, thereby necessitating that political considerations and Canadian interests are taken into account.
- The Navy and the Army are traditionally the first CF environments to deploy on expeditionary operations.
- Not all CF expeditionary campaigns will consist of the Canadian Air Force operating independently; Air Force elements will also have to operate jointly with the other environments and the different services of other nations' militaries.

Based on these assumptions, this paper will argue that in order for the Canadian Air Force to successfully undertake expeditionary operations, it is necessary that it develops a command and control culture that is adaptable and flexible. Such adaptability and flexibility has become necessary given the unpredictability of the international situation in the post-Cold War era.

**The Unpredictability of the Post-Cold War Era and the Need for Flexible Command and Control**

During the Cold War, Canada had an identifiable enemy and knew what it had to prepare for in the event of hostilities. With the fall of the Soviet Union, one does not know exactly what to expect. This problem is especially apparent when preparing for expeditionary operations, as situations where military forces will be required are much

more likely to occur overseas than on the domestic sphere. The dilemma for the CF, as Gimblett has noted, is that in the post-Cold War era the CF's response to individual crises has generally been *ad hoc*; Canada's military has not specifically prepared for expeditionary operations.[3] Furthermore, such responses have not all been of the traditional war-fighting type of role. Indeed, conflicts in the post-Cold War era have necessitated both symmetrical and asymmetrical responses, which have ranged from the more traditional war-fighting roles to non-traditional roles such as peacemaking, peacekeeping, peacebuilding, and humanitarian efforts.[4] Although it is necessary to ensure that Canada's Air Force possesses a war-fighting role when considering air expeditionary operations, it would be inadvisable to solely focus on this role given the unpredictability of the post-Cold War international scene.

With such unpredictability and the resultant need for Canada's Air Force to prepare for a multitude of roles, it is therefore logical to ensure that the Air Force's command and control structure and culture is flexible. This requirement has been outlined best by Sharpe and English:

> C2 structures should be designed so that they can evolve quickly to meet changing needs. Structures and processes that foreclose on future options should be avoided. To be adaptable to changing circumstances C2 structures should be developed as learning mechanisms that process experiences and use them to improve the system. The unpredictability of future operations requires that any CF C2 system be able to change its control philosophy rapidly to accommodate whatever situations may arise.[5]

Nevertheless, before such C2 systems for air expeditionary operations can be developed, there must be a common understanding of command and control in the Canadian Forces. The best option for the CF regarding command and control is incorporating the model that Dr. Ross Pigeau and Carol McCann have developed in the last few years.

**The Requirement for a Common Understanding of Command and Control: Pigeau and McCann**

Pigeau and McCann are defence research scientists with Defence Research and Development Canada (DRDC). As English has noted, Pigeau and McCann's command and control model is ideal for the CF, as it is "one of the leading empirically-based models of C2 currently being developed. Furthermore, as a mode being developed by Canadian researchers, using Canadian (as well as other) data, it is compatible with the organizational culture of the CF, and it addresses the major challenges confronting Canadian decision-makers."[6] Unlike most previous individuals who have studied command and control focusing on technological issues, Pigeau and McCann focus on the human dimension of command and control. They define command as "the creative expression of human will necessary to accomplish the mission" and control as "those structures and processes devised by command to enable it and to manage risk."[7] They argue that command capability is defined by a combination of competency, authority and responsibility, or a CAR Structure. Based on the CAR Structure, Pigeau and McCann conclude that effective command demands a balance between competency, authority and responsibility – that the commander must lie on the Balanced Command Envelope (BCE) as shown in Figure 1. Control, they stress, is a tool of command and as such it should support command competency, authority and responsibility. "Command and control," then, is defined by Pigeau and McCann as the establishment of common intent to achieve coordinated action, with common intent comprising of shared explicit intent and operationally relevant shared implicit intent.[8]

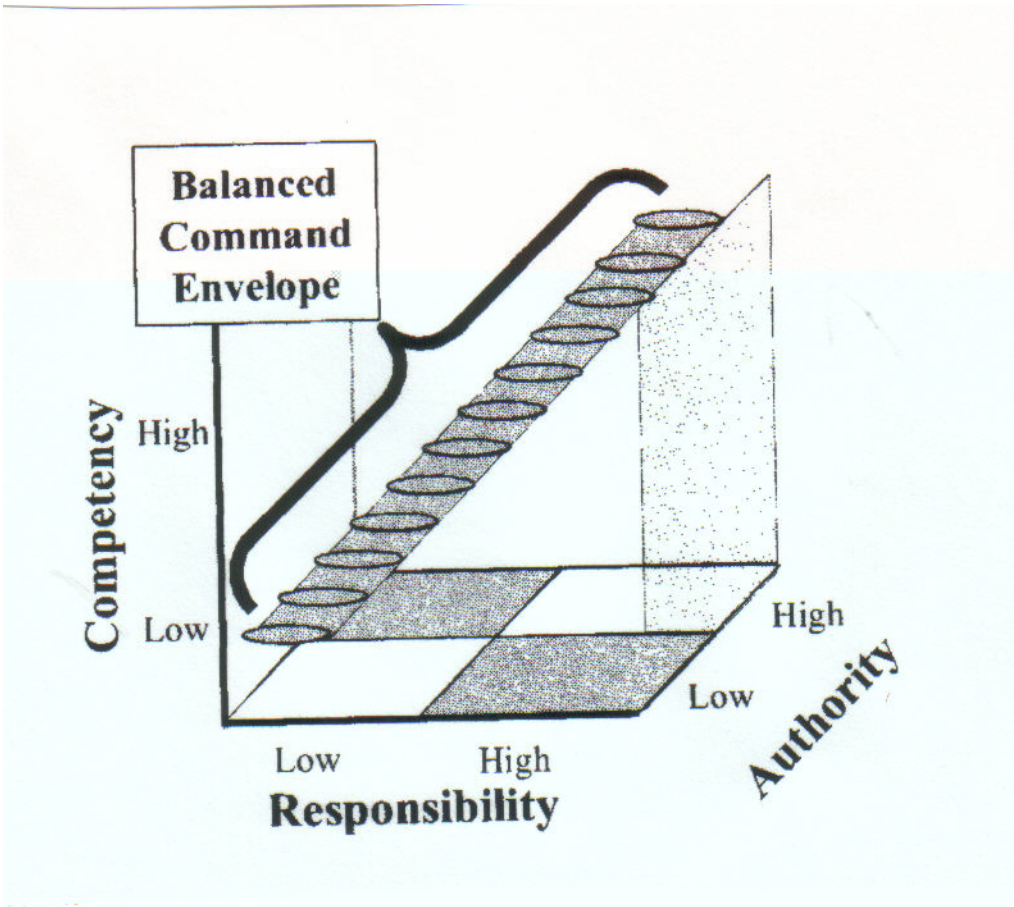


**Figure 1:** Pigeau & McCann's Balanced Command Envelope[9]

All three domains of the CAR Structure are crucial for air expeditionary operations. Competency is of particular importance when discussing the issue of air expeditionary force commanders. One of the most important competencies for officers operating in an expeditionary environment is that of interpersonal interaction with one's subordinates and allies. As Pigeau and McCann note, the basis of interpersonal interaction is the social skills that one develops from childhood. Indeed, these social skills are crucial for an officer operating in an expeditionary environment, as they include the attributes of "trust, respect, perceptiveness and empathy that promote effective teamwork," all of which are crucial for operating with one's allies.[10] If commanders are

able to develop these interpersonal competences properly, they will be able to earn respect and admiration from their peers and subordinates.[11]

The two remaining aspects of the CAR structure, authority and responsibility, are also important for air expeditionary operations. The respect and admiration that comes from a commander's good interpersonal competency are also significant in regards to the authority that a commander exercises. In fact, respect and admiration are key in assuring that commanders are able to develop the personal authority they need to command effectively. Furthermore, legal authority, which is the power to act as assigned by a formal agency (typically a government), together with the extrinsic responsibility of a commander, which involves "the obligation for public accountability," are also crucial in regards to the command and control structure of an expeditionary operation in which a Canadian officer must work.[12] This is especially true in regards to the missions undertaken in such an environment and the command decisions involved, so a more detailed discussion is warranted.

**Technology, Targeting, Politics and the Implications for Command and Control**

The past 20 years have seen a massive growth in technological innovation with regards to the military. Whether this has been an evolutionary process or a Revolution in Military Affairs will not be debated here, suffice to say that the technological implications of this phenomenon have had and will continue to have huge implications on the command and control of air expeditionary forces. Modern technology has placed an unprecedented amount of information at the hands of the commander. Since the best command decisions are made when commanders have the best information available to them, i.e., information superiority, it is therefore easy to assume that today's commander

has the tools to make the best decisions. The reality in fact is quite different, as the commanders are often faced with too much information; they must be able to distinguish from the information that is "need to know" from that which is "neat to know." Indeed, the vast amounts of data now available to a commander threatens an information overload which can harm mission performance. Commanders and their staff must be able to filter the raw data into useful knowledge from which they can make their decisions.[13] The consequence of such a phenomenon is that the decision cycle of commanders will continue to accelerate.[14] When operating individually, this is not always a pressing issue for a nation's military, but when operating with coalition partners in expeditionary operations, this increased decision cycle promises to have important implications for command and control.

One of the underlying principles of the CF operating in a coalition or alliance command and control process/structure is that Canadian interests must be respected. In the past Canadian interests have been represented by either a Liaison Officer or by a National Command Element attached to or affiliated with the coalition command and control structure.[15] In the past, the control of air assets occurred through Air Tasking Orders. These orders had a 72-hour planning cycle, which thus provided plenty of time for the Liaison Officers or the Canadian National Command Element to provide Canadian input and to assert Canadian interests. Nevertheless, as we have seen, technology has reduced the commander's decision cycle and the result is that a 72-hour Air Tasking Order planning cycle is no longer realistic. The current dilemma for Canadian officers involved in an expeditionary command and control structure is how to

ensure that Canadian input on decisions and Canadian interests are met in the modern decision cycle.[16]

This issue is all the more apparent today because of the increased politicization of targeting. Modern technology has improved the precision of air-launched weapons to the point that commanders are, by and large, able to pick and choose the specific targets they want to hit. Consequently, there has been much disagreement in the past few years among different nations as to what constitutes a valid military target. Different coalition members may not be signatories to the same agreements (i.e., the Ottawa Land Mine Treaty) or arm their aircraft with the same weapons.[17] This presents an interesting dilemma for a Canadian officer involved in an expeditionary command and control structure, for it may bring this officer into a conflict between fulfilling the mission and safeguarding Canadian interests. One illustrative scenario is that of a Canadian commander in a coalition command and control structure who is required to make a command decision for an American pilot to destroy a certain target. American interests might dictate that the target is a valid military objective, but Canadian interests may not agree. Therefore, Canada may not believe in the value of destroying the target, but the officer still has to make the command decision to order the pilot to strike (or not to strike). Such a scenario would not only place a huge amount of responsibility and stress upon a commander, but also could possibly endanger his subordinate in the cockpit should the pilot not attack.

Canada is a liberal democracy and as such its military must protect and respect Canadian interests. In the above scenario, the commander must balance his extrinsic responsibility and legal authority in order to ensure that he respects Canadian interests.

These days commanders are being held increasingly accountable for every action of their forces. Indeed, since targeting requires national authority to fire, the commander must be able to accept the risk of collateral damage – i.e., inadvertently killing civilians – that a decision to fire might entail.[18] This issue of collateral damage has been made all the more imperative with the recent growth of information technology and news reporting. Non-military agencies now have access to unprecedented amounts of information and the Orwellian "Big Brother" increasingly has his eye on the military. The implications for commanders are considerable, for, as Okros has noted, "leaders must also be prepared to fight and win while being observed, and held accountable, by politicians and the civilian population."[19] Clearly, today's information advances have increased the importance of politics in regards to targeting and have subsequently had an important factor on expeditionary command and control structures.

The increased politicization of targeting and the resulting increased sensitivity of command decisions have also had another impact on the expeditionary command and control structure. Because of the great political risks that collateral damage entails, some air commanders now wish to exercise greater control over air assets.[20] Due to their nature, expeditionary operations are replete with uncertainty, so in an effort to reduce this uncertainty as much as possible, a commander is most likely to interfere by attempting to exercise more control. Such micromanagement has the potential to be problematic. Although it provides the commander with increased certainty, more centralized control threatens not only to slow down decision-making, but also to undermine the authority of subordinate commanders.[21]

English argues that the two most recent Western air campaigns, Operation Allied Force and Operation Apollo, "have demonstrated that commanders at the highest level can now exercise close control over aerospace assets, much more so than could be exercised over air forces in the past or by the army and navy today."[22] However, by trying to control as much as possible, commanders risk the possibility of simply putting too much on their plate. As we have seen, with today's technology there is a very real possibility that the volume of information available will overwhelm a commander's capacity to assimilate the importance of this information and respond with effective and timely decisions. The result would be a slowing-down of a commander's decision-making process, which could be devastating for the successful execution of operations.[23]

Micromanagement also threatens to have a significant negative effect on subordinate commanders. With senior commanders attempting to implement as much centralized control as they can, the result will not only be complacency and a loss of local initiative, but also, and perhaps more importantly, the development of a belief by the subordinate commander that the superior does not have confidence in the subordinate's abilities.[24] The consequences could be very damaging: morale could plummet, and the authority of aircrew and their immediate commanders to carry out the functions of control or command could be severely limited.[25] Furthermore, commanders could lose much of their personal authority, thereby moving them off the Balanced Command Envelope.

One of the main command and control issues concerning expeditionary air operations, then, is to balance the risk of too much uncertainty against the risk of a slower decision-making cycle and demoralizing subordinates by deciding how much control a

commander should exercise. Phillip Meilinger has noted that technology has now permitted two command and control options to commanders in order to tackle this issue: a centralized control-centralized execution air campaign or decentralized control-decentralized execution air campaign. During Operation Apollo, the Commander-in-Chief Central Command, General Tommy Franks, USAF, opted for the former option and utilized his staff instead of component commanders to exercise control over aerospace resources.[26] This is not surprising, given that the United States Air Force (USAF) stresses that history has shown that "centralized control [is] the best way to effectively command airpower."[27] It is therefore logical to assume that the USAF will continue to press forth with its centralized control focus. This is especially important to note when discussing the issue of CF air expeditionary operations because of the continued likeliness that Canada will continue to operate in coalitions of which the United States is a member and in which it will likely take a leading role. Having said this, it is now proper to discuss the issue of Canadian Air Force operability in coalition expeditionary operations.

**Interoperability of the Canadian Air Force in Multinational Coalitions and Command and Control**

It is highly likely that Canada will continue to engage in broad-based alliances or coalitions. Canadian involvement in such groups not only acts as a counter-weight to American dominance and propensity towards unilateralism, it is also critical for Canada's international status as this involvement provides a means for Canada to project its influence in the international scene.[28] If Canada chooses to be part of a coalition, it obviously wants its interests to be known and respected by its allies. Given the small size of the CF, it is clear that the Canada's military will not play the largest or the leading role

in such a coalition. Therefore, the challenge for future Canadian expeditionary forces will be to incorporate the specific Canadian requirements and interests as a junior partner within a larger coalition construct.[29]

To be able to ensure that Canadian interests and requirements are met in coalition expeditionary operations, it is necessary that the CF be involved in the coalition's command and control process/organization. To do so, however, Canada must first meet some requirements. First, as Gimblett notes, Canada needs to send sufficient resources in order to have greater input on the command and control process/organization:

> Where Canadian governments might be content merely to have the national flag noted in coalition or alliance operations, greater national input into those operations is more likely to be assured with high-level command representation. In other words, sovereignty within the international military community is best assured by being able to field formations large enough to warrant independent command.[30]

In sum, it is clear that "size matters," both in terms of materiel and human resources, in regard to the amount of input the CF will have on expeditionary command and control processes/organizations.[31]

Second, the CF needs to develop a cooperative expeditionary culture and mindset that will make it interoperable with coalition allies if it hopes to participate in future expeditionary command and control processes/organizations. Interoperability is key for expeditionary operations, for, as Thierry Gongora has noted, "the most deployable [i.e., expeditionary] force will not be considered by a coalition if once deployed it cannot operate effectively with other members due to language or doctrinal barriers, or incompatibility in equipment and supplies."[32] It would appear that the simplest way for Canada's Air Force to circumvent such potential problems would be to ensure that its doctrine adheres to those of its allies. Indeed, one of the key means of ensuring Canadian

Air Force interoperability with coalitions is to make certain that CF aerospace doctrine is *compatible* with those of major coalition partners. Compatibility, however, does not mean that Canadian doctrine has to be *identical* to the doctrine of one's allies.[33] To simply duplicate the doctrine of another country's military is dangerous because such doctrine has been developed to reflect that nation's military organization, capabilities, culture, and strategic issues/problems, and may not fit into how CF culture has developed over the years.[34]

Thus, it is clear that doctrine development does not completely suffice when endeavouring to become interoperable with coalition expeditionary command and control processes/organizations. Quite simply, as Paul Johnston has noted, "doctrine is not enough." Doctrine, Johnston continues, has a weak or indirect effect on the actual behaviour of armed forces in operations. Instead, how armed forces operate is "more a function of their culture than of their doctrine."[35] Therefore, instead of focusing solely on expeditionary *doctrine* development, it would be more prudent for Canada's Air Force to develop an air force *culture* and mindset that allows commanders to work with coalition partners.[36] How this is to be done is a major issue that Canada's Air Force must tackle.

In order to ensure that Canada's Air Force is able to plug into larger US and coalition expeditionary command structures, it will be necessary to ensure that the Air Force's cultural framework is able to import concepts and terms from other cultures to promote interoperability.[37] One way to go about achieving this goal is to increase the exposure of CF officers to potential coalition partners (and conversely them to the CF) through training and liaison. This practice not only will reduce the potential for problems

once deployed, it will also allow the CF to develop a cadre of trained officers to draw from when needed for expeditionary operations.[38]

Nevertheless, before exposing CF officers to potential coalition partners, it is first necessary to ensure that these officers are prepared with the skills and experience necessary for such exposure. Such preparation will require "professional development based on education, training, and experience throughout the careers of members of the Canadian Forces."[39] Training in the CF creates competence in its military personnel by allowing them to use the equipment or tools required for current military tasks. However, by focusing on equipment usage, training for *command*, which includes activities such as decision-making, problem solving, negotiating skills, and teamwork, has been largely neglected.[40] It is professional development in the form of education and experience that are crucial for preparing future commanders and it is in these areas where resources must be dedicated.

Recently the demographics of the CF have been moving away from the more traditional blue-collar soldier to more highly-skilled knowledge workers. Okros stresses that along with this change must be "a shift from short-term, task-oriented training to longer-term, broader education and professional development."[41] Consequently, the Canadian professional military education system must be able to educate future commanders to think and to learn and to give them the confidence to operate in the new environments within which the CF are obliged to work. Such new environments include expeditionary operations in the unpredictable post-Cold War world.[42] One of the main problems that the CF faces in this regard is that it is often too difficult for officers to be able to get away from their current jobs in order to pursue another degree.[43]

Nevertheless, education must remain a key priority if Canada's Air Force hopes to have the people it needs to play a role in expeditionary command and control processes/organizations.

Practical application, or experience, must also be high on the list of priorities. As Pigeau and McCann have noted, command potential, and therefore the creation of adequate command structures, is best achieved by giving commanders and potential commanders "favourable conditions for command expression." Although "favourable conditions" include professional military education, it is perhaps even more important to grant commanders "opportunities for exercising authority"; that is, the chance to actually *exercise* command.[44] This can be achieved by deploying on expeditionary operations and by seeking additional planning positions and exercises with one's allies.[45] However, such solutions will not go far enough. What is also needed is a formal mentoring system that will ensure that the CF is able to grow and retain competent commanders. Indeed, such mentoring is absolutely crucial given the size of the CF and the resultant limited existing command opportunities.[46] In sum, it is clear that training and especially education and practical experience are crucial for the development of commanders in Canada's Air Force who will be able to participate in expeditionary command and control processes/structures.

**Command and Control Issues Regarding the Canadian Air Forces Expeditionary Capabilities**

Before concluding this paper, I will briefly examine potential ways in which Canada's Air Force can operate in expeditionary campaigns and the command and control implications involved. Gimblett has indicated that the way that the CF reacts to an international crisis is to "go with what you've got" and that the Canadian experience

has been that "the Navy leads, the Army defines, and the Air Forces lend substance."[47] Essentially, CF expeditionary operations have tended to be mostly a Navy-Army domain. Some have argued that this reality means that air forces will always be subject to sea and land forces and that the air force should therefore should eliminate expeditionary capabilities altogether so as to ensure the independence of aerospace power.[48] Although this solution is simplistic, it does highlight some command and control issues concerning Canada's Air Force operating in expeditionary operations.

We have already noted that when an international crisis arises and Canada decides to send military forces, it is usually the Navy, followed by the Army that responds first. What is not immediately realized is that in such a scenario, elements of the Canadian Air Force go along with these naval and Army forces. For example, along with the Navy's ships go the Air Force's Sea King helicopters, while along with the Army's brigades goes the Air Force's tactical helicopters. What this means is that when planning for command and control contingencies, the Canadian Air Force should take these rotary-wing platforms into account as well as its more traditional fixed-wing platforms (i.e., CF-18s, Hercules, Auroras, etc.). Another important implication is that the Air Force platforms working with the Navy and Army necessitates that the Air Force plan for joint operations.

Such a necessity to plan for joint operations could be problematic for the Air Force. Although there are some in the CF who believe that it is possible to devise one method of command and control for all three environments, this has not been possible due largely to the large doctrinal differences between the Air Force and the Army.[49] The result for the CF is that its fixed-wing platform expeditionary operations have not focused on joint operations, but instead on more service or

environment-focused (i.e., air force-to-air force, navy-to-navy) operations.[50] The only place where the Canadian Air Force has had success with command and control procedures/structures in joint situations has been in its rotary-wing platforms. For example, during the 2003 Air Symposium Seminar on command and control, one Canadian Air Force officer from the Sea King community noted that once his aircraft are out on operations (i.e., once "the ship has left the dock"), the operational and tactical command and control organization that the Air Force and naval officers incorporate works quite well.[51] Clearly, it is necessary that Canadian Air Force planners should take joint command and control and rotary-wing issues into consideration when preparing for expeditionary air operations. Furthermore, such planning should not just focus on interoperability with the *Canadian* Navy and Army in joint operations, but also with the air forces *plus* the navies and armies of Canada's coalition partners.[52]

Finally, the Canadian Air Force must plan for the eventuality that its front line fixed-wing combat aircraft, the CF-18s, might not undertake operations against traditional strategic targets. Air force culture dictates that the Canadian Air Force (and, it could be added, the air forces of most nations) will always want to focus on striking traditional strategic targets such as an enemy's command and control structure. Nevertheless, during the Kosovo air campaign, the CF's Hornets were relegated to attacking tactical targets such as tanks, artillery, armoured personnel carriers, etc., instead of traditional command and control targets.[53] Not being able to strike at the usual strategic targets greatly frustrated Canadian pilots. Major Todd Balfe, for example, said that "it was a horrible mission and we hated it."[54] Indeed, most of the pilots felt that the use of the Hornets to attack such tactical targets was a misuse of airpower and that

instead air power is best used "going after the head of the snake," that is, striking at command and control targets.[55]

Regardless of these Air Force officers' beliefs, the fact of the matter is that such tactical strike operations may be a role that the CF's Hornets will undertake in future air expeditionary campaigns. From this example and from our discussion of the need to prepare for joint operations, we can see that one of the issues that the Canadian Air Force must tackle if it hopes to operate in expeditionary command and control processes/organizations is to develop cultural sensitivities that are conciliatory and that demonstrate a willingness to cooperate with other services and other nations in order to accomplish the mission.

As Pigeau has noted, one of the capabilities in the CAR Structure that is ignored the most, but is one of the most important is an individual's *emotional* capability. In the scenarios that we have discussed above, an air force officer must have the emotional maturity to let go of his ego and accept different and new ideas and ways about doing things. It is understood, though, that it is difficult to develop such a capability because an officer's culture has led him to believe that he is the trained expert and that he therefore knows best.[56] It is for that very reason that air force officers must undergo a cultural change that will ensure that they are more responsive to and accepting of the ideas and cultures of different services and coalition allies. Only through this cultural change will the air force be able to take a significant and successful role in expeditionary command and control processes/structures.

## Conclusion

This paper has argued that the Canadian Air Force must develop a command and control culture that is adaptable and flexible if it is to successfully undertake expeditionary operations. It began by stressing that such a requirement is necessary in light of the unpredictable nature of conflict in the post-Cold War international world scene. Furthermore, there is first a requirement for a common understanding of command and control in the CF. I have argued that Pigeau and McCann's command and control model based on the CAR Structure and the Balanced Command Envelope is the best C2 option available to Canada's military.

Of the several command and control issues that have been discussed in this paper, one of the most pressing today is technology's acceleration of the decision-making cycle and the resultant difficulties regarding the need for Canadian input into targeting and the ability to ensure that Canadian interests are respected in coalition command and control processes/structures. The politicization of targeting, which has created a climate in which excess collateral damage is abhorred, plus the increased information-gathering and reporting abilities of non-military agencies such as news services, have combined to put increased responsibilities and stress on commanders operating in expeditionary campaigns. Furthermore, the increased politicization of targeting and the resulting sensitivity of command decisions have also led commanders, out of a desire to reduce the political risks of collateral damage, to exert greater control over air assets. As we have seen, such micromanagement threatens both to slow down decision-making and to undermine the authority and morale of subordinate commanders.

Canadian expeditionary forces will need to incorporate specific Canadian requirements and interests as junior partners within a larger coalition construct. Consequently, in order to ensure that the Canadian Air Force can be interoperable within a coalition and involved in its command and control process/structure, it needs to fulfill two requirements. First, it must send sufficient materiel and human resources in order to assure high-level Canadian command representation. Second, and perhaps most importantly, the Canadian Air Force must develop a cooperative and flexible expeditionary culture and mindset that will make it interoperable with coalition allies. Doctrinal changes will not suffice; only through cultural changes will the Air Force be successful. Exposure of Air Force officers to potential coalition partners through liaison programmes is one aspect of assuring such cultural change. More important, however, is the requirement to ensure that Canadian officers receive the proper command development in the form of training, but especially professional education and experience.

Finally, the Air Force must recognize that typical CF expeditionary operations have tended to be a Navy-Army domain. Nevertheless, it must be realized that Air Force elements (usually in the form of rotary-wing platforms) will deploy along with the Navy and Army forces. Consequently, planners must prepare for the inevitability that the Air Force will have to deal with joint command and control issues on expeditionary operations. Part of such preparation must also include the need for Air Force officers to develop cultural sensitivities that are conciliatory and that demonstrate a willingness to cooperate with other services and other nations in order to accomplish the mission. In so doing, officers must concentrate on what Pigeau has termed a person's emotional

capability and thereby develop the emotional maturity to let go of their ego and accept different and new ideas and ways about doing things. Although not a perfect solution, it is clear that cultural change and adaptability will be crucial for the success of command and control in future CF expeditionary operations.

NOTES

[1] Richard Gimblett, "The Canadian Way of War: Experience and Principles," paper presented at the Seapower Conference 2002, Dalhousie University, Halifax, NS, 7-9 June 2002 (revised November 2002), 6.

[2] Thierry Gongora, "The Meaning of Expeditionary Operations from an Air Force Perspective," paper presented at the Seapower Conference 2002, Dalhousie University, Halifax, NS, 7-9 June 2002, 2. Gongora's original source is Department of Defense, *Dictionary of Military and Associated Terms* (Washington, D.C.: Joint Doctrine Division, publication JP 1-02, 2001), 156.
[3] Gimblett, "Canadian Way of War," 4.
[4] Al Okros, "Into the Twenty-first Century: Strategic Human-Resources Issues," in Douglas Bland, ed., *Backbone of the Army: Non-Commissioned Officers in the Future Army* (Montreal: McGill-Queen's Univ. Press, 2000), 31; and Gongora, "Expeditionary Operations from an Air Force Perspective," 11.
[5] G.E. (Joe) Sharpe and Allan D. English, *Principles for Change in the Post-Cold War Command and Control of the Canadian Forces*, (Winnipeg: Canadian Forces Training Material Production Centre, 2002), xvii.
[6] Allan English, "Rethinking 'Centralized Command and Decentralized Execution,'" in Douglas L. Erlandson and Allan English, eds., *Air Symposium 2002: Air Force Command and Control* (Winnipeg: Canadian Forces Training Materiel Production Centre, 2002), 71.
[7] Ross Pigeau and Carol McCann, "Re-Conceptualizing Command and Control," *Canadian Military Journal* 3, no. 1 (Spring 2002), 56.
[8] Ross Pigeau and Carol McCann, "What is a Commander?," in Bernd Horn and Stephen J. Harris, eds., *Generalship and the Art of the Admiral: Perspectives on Canadian Senior Military Leadership* (St. Catharines, ON: Vanwell Publishing, 2001), 91-95; and Sharpe and English, *Principles for Change*, xv-xvii.
[9] Pigeau and McCann, "What is a Commander," 91.

[10] Pigeau and McCann, "Re-conceptualizing Command and Control," 58.
[11] Pigeau and McCann, "What is a Commander?" 85.
[12] Ibid., 85-87.
[13] Allan English, "Contemporary Issues in Command and Control," in Dennis Margueratt and Allan English, eds., *Air Symposium 2001: Intelligence, Surveillance and Reconnaissance* (Winnipeg: Canadian Forces Training Materiel Production Centre, 2001), 98-100; Timothy L. Thomas, "Kosovo and the Current Myth of Information Superiority," *Paramaters* 30, no. 1 (Spring 2000), 13-29.
[14] Syndicate 6 Air Term, CSC 29, "2003 Air Symposium: Command and Control within an Expeditionary Air Force," presentation given at the 2003 Air Symposium, Canadian Forces College, Toronto, ON, 4-5 March 2003, 3.
[15] Ibid., 7. The Syndicate notes further that for air force assets, this usually occurs in the Combined Operations Center, which is most often commanded by an American general officer.
[16] Ibid., 7-9.
[17] For example, Canadian aircraft do not employ cluster munitions. Ibid., 9.
[18] English, "Rethinking 'Centralized Command and Decentralized Execution,'" 76.
[19] Okros, "Strategic Human-Resources Issues," 33.
[20] English, "Rethinking 'Centralized Command and Decentralized Execution,'" 76.
[21] Syndicate 6, "Command and Control within an Expeditionary Air Force," 13; and Victor Budura, Jr, *The Command or Control Dilemma: When Technology and Organizational Orientation Collide*, paper presented to the Air Force 2025, April 1996, 11.
[22] English, "Rethinking 'Centralized Command and Decentralized Execution,'" 75. Such a scenario also closely resembles what Thomas Czerwinski has described as "command-by-direction." Used from the beginning of organized warfare, this form of command and control is based on commanders attempting to direct all of their forces all of the time. This practice of command fell into disfavour in the middle of the 18th century as the size of armed forces made it increasingly difficult to exercise. Nevertheless, Czerwinsky notes that modern technology has led the US Army to resurrect "command-by-direction" in the belief that technology "can provide the commander with the ability to exercise this type of command again." Thomas J. Czerwinski, "Command and Control at the Crossroads," *Paramaters* 26, no. 3 (Autumn 1996), 121-132; English, "Contemporary Issues in Command and Control," 99. Quote from English.
[23] Syndicate 6, "Command and Control within an Expeditionary Air Force," 13.

[24] Ibid., 13; Closing Address by the Chief of the Air Staff, Lieutenant General Lloyd C. Campbell, Air Symposium 2002: Command and Control, Canadian Forces College, 27-28 March 2002; and English, "Rethinking 'Centralized Command and Decentralized Execution,'" 75.
[25] English, "Rethinking 'Centralized Command and Decentralized Execution,'" 75; and Pigeau and McCann, "Re-conceptualizing Command and Control," 57.
[26] English, "Rethinking 'Centralized Command and Decentralized Execution,'" 75; Phillip S. Meilinger, "Preparing for the Next Little War: Operation Enduring Freedom Points to New Ways of Warfighting," *Armed Forces Journal International* (April 2002), 2.
[27] Cited in English, "Rethinking 'Centralized Command and Decentralized Execution,'" 75. English cites USAF's *Air Force Basic Doctrine*, AFDD-1 (September 1997).
[28] Gimblett, "Canadian Way of War," 7; and Closing Address by the Chief of the Air Staff, Lieutenant General Lloyd C. Campbell, Air Symposium, "Canadian Expeditionary Air Forces," Canadian Forces College, Toronto, 4-5 March 2003. Gimblett also notes that despite the Canadian propensity to engage in broad-based alliances or coalitions, when it comes to armed conflict situations, "the core partners… tend to be the ABCA nations (America, Britain, Canada, Australia)."
[29] Syndicate 6, "Command and Control within an Expeditionary Air Force," 29.
[30] Gimblett, "Canadian Way of War," 7.
[31] Gimblett, "Canadian Way of War," 7; and Gongora, "Expeditionary Operations from an Air Force Perspective," 9.
[32] Gongora, "Expeditionary Operations from an Air Force Perspective," 10.
[33] Syndicate 6, "Command and Control within an Expeditionary Air Force," 22.
[34] English, "Rethinking 'Centralized Command and Decentralized Execution,'" 72. English is referring specifically to joint doctrine here, but I believe that this argument can be expanded to include all doctrine in general as well.
[35] Paul Johnston, "Doctrine Is Not Enough: The Effect of Doctrine on the Behaviour of Armies," *Parameters* 30, no. 3 (Autumn 1996), 30.
[36] Johnston, "Doctrine Is Not Enough:, 37; and Syndicate 6, "Command and Control within an Expeditionary Air Force," 17.
[37] Syndicate 6, "Command and Control within an Expeditionary Air Force," 17.
[38] Ibid., 22-23.
[39] Pigeau and McCann, "Re-conceptualizing Command and Control," 61; Sharpe and English, *Principles for Change*, xiv. Quote from Sharpe and English.
[40] Syndicate 6, "Command and Control within an Expeditionary Air Force," 16. Pigeau and McCann note that this phenomenon is largely due to the fact that Canadian military culture traditionally values control over command and hence training over education. See Ross Pigeau and Carol McCann, *Taking Command out of C2* (Toronto: Defence and Civil Institute of Environmental Medicine, 1996).
[41] Okros, "Strategic Human-Resources Issues," 36.
[42] Syndicate 6, "Command and Control within an Expeditionary Air Force," 15-16.
[43] Seminar 3 Findings, Preparation for Command – Education Training, and Experience, Air Symposium 2002: Command and Control, Canadian Forces College, 27-28 March 2002.
[44] Pigeau and McCann, "Re-Conceptualizing Command and Control," 57, 61. Quotes from page 57.
[45] Seminar 3 Findings, Preparation for Command – Education Training, and Experience, Air Symposium 2002: Command and Control, Canadian Forces College, 27-28 March 2002.
[46] Syndicate 6, "Command and Control within an Expeditionary Air Force," 16-17.
[47] Gimblett, "Canadian Way of War," 6.
[48] Dr. Jim Fergusson "Over From Here: Expeditionary Forces, the Canadian Forces and the Air Force," Presentation given at the 2003 Air Symposium, "Canadian Expeditionary Air Forces," Canadian Forces College, Toronto, 4-5 March 2003.
[49] English, "Rethinking 'Centralized Command and Decentralized Execution,'" 77. English notes that there "are constant pressures in the CF to create some sort of all-encompassing C2 system based on a land-centric joint doctrine."
[50] Seminar 5 Findings, Operational Command of Canadian Air Assets in Joint Operations, Air Symposium 2002: Command and Control, Canadian Forces College, 27-28 March 2002.
[51] Seminar 3 Findings, Command and Control, Air Symposium, "Canadian Expeditionary Air Forces," Canadian Forces College, Toronto, 4-5 March 2003.

[52] In addition, because Canada will continue to operate in *multinational* coalitions, the Canadian Air Force must also make sure that it does not limit itself to focusing solely on its interoperability with the United States Air Force.
[53] Paul Johnston, "Canadian Hornets over Kosovo: A Small Part of a Future Model for Air Power?," Office of Air Force Heritage and History, eds., Proceedings of the 6th Annual Air Force Historical Conference, Cornwall, ON, 21-23 June 2000, 115.
[54] Quoted in Ibid. Johnston cites Bruce Wallace, "Canadian Aces over Kosovo" *Macleans*, 27 March 2000, 23, for Major Balfe's comments.
[55] Johnston, "Hornets over Kosovo," 115.
[56] Seminar 3 Findings, Command and Control, Air Symposium, "Canadian Expeditionary Air Forces," Canadian Forces College, Toronto, 4-5 March 2003.