Command or Control?
Considerations for the Employment of Air Power in Joint Operations

Article #1 in a series on command and control and the Royal Canadian Air Force[1]

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Introduction

Over its nearly 100 years of existence, the air forces of Canada have evolved into the modern, highly capable and battle-tested Royal Canadian Air Force (RCAF) of today. Current members of the RCAF can be justifiably proud of the heritage that previous generations of airmen and airwomen have handed down to us. After decades of experience participating in operations that included everything from United Nations peacekeeping missions to conflicts in the Persian Gulf, the Balkans, Afghanistan and Libya, the RCAF has developed an effective way of operating, defined by our tactics, techniques and procedures, widely known as TTPs. Aircrew and ground crew both know the value of "following the checklist," adhering to standard operating procedures and using tactics that are proven.

While the tactical lessons have endured, the same cannot be said of the operational-level art of command and control (C2). Although it once possessed a detailed and effective capability to plan, coordinate and command at the operational (or theatre) level, the post-cold-war RCAF has experienced a dramatic erosion in the general understanding of the principles of command and control. With the experiences of recent joint, combined operations providing the impetus, the RCAF has begun to resurrect its understanding of operational-level C2.

Putting that knowledge into practice will, however, take some time to accomplish. Several successful operational-level C2 education initiatives are currently gaining momentum. These include the Air Force Officer Development (AFOD) Program and the Air Component Coordination Element (ACCE) Seminar. At the heart of this education process is the key message to planners, staff officers and commanders at all levels of air operations—understand how command differs from control and how much of each must be delegated. Getting this right before we head out the door pays off quickly … even in 400 BC, Chinese general and military strategist Sun Tzu knew this: "[T]he victorious army first realizes the conditions for victory, and then seeks to engage in battle. The vanquished army fights first, and then seeks victory."[2]

RCAF C2 doctrine—A short history

During the Cold War, the RCAF participated in the development of C2 doctrine used by our allies in the North Atlantic Treaty Organization (NATO) and the North American Aerospace Defence Command. The operational-level headquarters, known as the group, ensured that staffs worked theatre-level issues for different flying communities across the country. Several generations of commanders, supported by senior staff officers ensured that institutional

continuity endured for the squadrons and units that comprised Air Transport Group, Fighter Group, Maritime Air Group, 10 Tactical Air Group and 14 Training Group. There was an accepted framework of which officer commanded what force and who assigned missions to be flown. How we fit into the overall plan was reasonably well understood.

Following the Cold War, the RCAF ceased development of C2 doctrine and began to fall behind other Western air forces in the understanding of the effective employment of air power at the operational level. This changed following the publishing of the revised B-GA-400-000/FP-000, *Canadian Forces Aerospace Doctrine* by the Canadian Forces Aerospace Warfare Centre in 2009. With the follow-on B-GA-401-000/FP-001, *Canadian Forces Aerospace Command Doctrine*[3] in March 2012, the RCAF established, for the first time in decades, operational-level C2 doctrine that was applicable across all RCAF operations.

In order to be relevant to the RCAF, the B-GA-401 had to do several things properly at the same time. It had to provide a place where the everyday air force could find its structure and its various missions defined from the perspective of those involved in operations. Ostensibly a force employment (FE) C2 manual, the B-GA-401 also had to help organize the thinking of all those involved in the employment of air power. Further, the doctrine had to be consistent with Canadian Forces (CF) operational-level joint doctrine[4] and that of our allies.[5] These commonalities had to begin with the way that command, control and C2 are defined.

Command, control and C2 defined

Most importantly, the B-GA-401 opens the door to a more complete understanding of what command and control really means. Part of the military vernacular that evolved during the Cold War, "C2" is often used but not fully understood.[6] How many times have you said "C2" without really breaking it down and thinking it through? Appreciating how different "command" and "control" can be, yet how inextricably linked they must be, is at the crux of understanding the most fundamental concepts in the employment of air power. In order to best function in joint operations with land and maritime forces, the RCAF must first fully understand and put into practice the concepts of command, control and C2.

Command. The concept of "command" has been around since ancient times and is generally well understood. Command is defined as "[t]he authority vested in an individual of the armed forces for the direction, coordination, and control of military forces."[7] Further, all or part of this authority may be delegated to subordinate commanders in the chain of command. For example, a wing commander (W Comd) delegates their command authority to a unit/squadron commanding officer (CO) assigned to that wing. In its most basic form, all command authority exercised by personnel in a unit/squadron is delegated by that unit/squadron CO.

Control. How do those with command authority actually go about exercising it during force employment operations? The answer lies in the concept of "control." Control is "[t]he authority exercised by commanders over part of the activities of subordinate organizations, or other organizations not normally under their command, which encompasses the responsibility for implementing orders or directives. Note: All or part of this authority may be delegated."[8] In short, control provides a means of exercising effective command. During air operations, control

typically manifests itself in the authority to assign missions via the air tasking order (ATO), a document that organizes and coordinates the collective effort of a potentially complex air campaign. An ATO permits a single commander to efficiently task a large number of units/squadrons, normally dispersed at locations both inside and external to a theatre of operations.

Command and control. C2 is "[t]he exercise of authority and direction by a commander over assigned, allocated and attached forces in the accomplishment of a mission."[9] In practice, C2 is a *process* that is performed through an arrangement of personnel, equipment, communications, facilities and procedures. The C2 process is employed by commanders when directing, coordinating, monitoring, assessing and planning operations to accomplish the mission. The concept of C2 is summarized in Figure 1. During complex air operations, exercising effective control can be a much more complicated process than exercising effective command. As a result of this reality, air forces require a very focused view of C2, known as the fundamental tenet of air power—centralized control and decentralized execution.

Centralized control and decentralized execution

Air forces must be organized on sound C2 principles with the purpose of achieving operational effectiveness across the spectrum of conflict. Centralized control is required to ensure the most efficient use of limited air assets, permitting air power activities to be refocused quickly to exploit fleeting opportunities, to respond to the changing demands and priorities of the operational situation, and to be concentrated at the critical place and time to achieve decisive results. Decentralized execution of air power operations permits assigned activities and missions to be performed simultaneously by lower-level commanders at different locations across the theatre. This concept, used in every major conflict since the Vietnam War, was first codified during the 1991 Gulf War and is still evolving, adapting and improving.

COMMAND:	CONTROL:
• constitutes formal authority	• is derived by delegation from command
• provides oversight, unifying all action	• supports command in detail
• is focused on establishing common intent	• is focused upon the details of execution
Together as "C2" the following five activities are performed:	
MONITORING • ASSESSING • PLANNING • DIRECTING • COORDINATING	

Figure 1. Command and control[10]

Centralized control gives coherence, guidance and organization to the employment of air power. It is achieved through a single officer, referred to as air component commander (ACC) who, having a theatre-wide perspective, has the authority to assign missions to air forces to best achieve objectives. The ACC is responsible for the control (to include planning, direction, prioritization, allocation, synchronization, integration and deconfliction) of all air forces assigned or temporarily made available. Importantly, the ACC does not normally need to *command* assigned or made-available air forces, for it is *control* that enables the tasking of air power missions.[11]

Decentralized execution is the delegation of authority to subordinate commanders to execute assigned missions and is subject to the commander's intent, the rules of engagement and the other parameters established by higher command. Decentralized execution fosters initiative and situational responsiveness and provides subordinate commanders with the authority to apply their expertise and understanding of local conditions to accomplish the mission within the guidelines and overall intent of the commander. Generally speaking, the more decentralized that command can be in an air operation, the more likely that the myriad tasks, details and variables that must be seen to will be accomplished, no matter what friction is experienced. Commanders at all levels must take necessary actions to ensure they execute their assigned missions and "fly the frag."[12]

Finding the balance. An ACC must consider the characteristics of air power when deciding the degree to which control will be centralized or decentralized and the degree to which execution will be centralized or decentralized. Some factors greatly effect this decision and others will tend to support an argument for either a higher degree of either centralized or decentralized control. Factors that support centralization of control include unity of command, concentration of force and economy of effort. For example, an operation that involves a complex targeting process of the enemy while in close proximity to friendly forces might lend itself to more centralized control, permitting the ACC to better manage a dynamic and changing situation.

In contrast, a lesser degree of centralized control may be suitable in some operations. Factors that support this decentralization include freedom of action, flexibility and mission command.[13] Operations that are relatively simple, such as an air mobility operation involving only several deployed aircraft and crews, might be best controlled by a deployed C2 entity. While the ACC can maintain overall control of such operations, factors such as distance, different times zones and limited communications may limit the ACC's situational awareness sufficiently that delegation of control might make sense.

Commanders must analyse the situation and then centralize or decentralize their control measures as appropriate to the circumstances. It is important to bear in mind that generally speaking, the principles of war, principles of command and the characteristics of air power reinforce the fundamental tenet of centralized control and decentralized execution. Figure 2 summarizes the factors to be considered in the centralization of control.

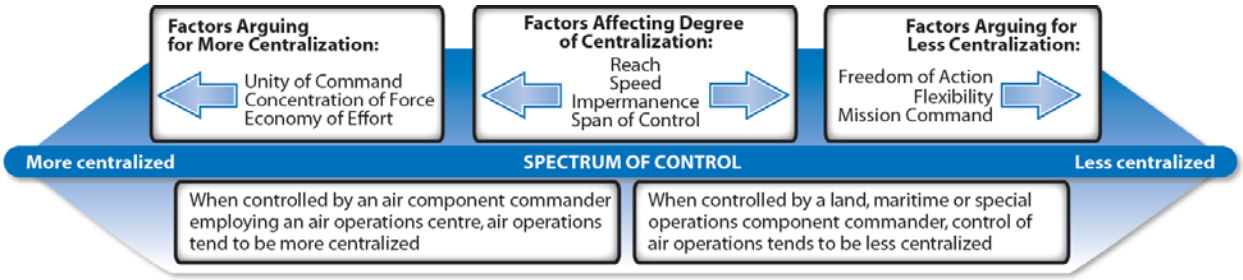

Figure 2. Spectrum of centralized control in aerospace operations

So … command or control?

Once commanders at all levels appreciate the concepts of command, control, C2, centralized control and decentralized execution, the decision can now be made as to what the appropriate C2 organization should be for any given operation. Above all else, commanders must see command as separate from control, exercised by different officers with significantly different responsibilities and focus. The traditional practice of simply "dual-hatting" the most senior officer in an operation with both command *and* control authority is often not the best decision, causing that commander to become overloaded while simultaneously dealing with the issues of command and a span of control that is too great to be effectively managed.

Commanders must continually think of command and control not as inseparable twins but as closely linked, separate concepts. Effective air power operations require increasingly specialized commanders to exercise control over assigned forces. More often than not, commanders must separate the command authority from the control authority and delegate them to separate officers. In a sense, commanders of air power operations must increasingly think of C2 as "command *or* control." Consider the following with respect to air-power operations.

Command. Given that all elements of the CF will be under the command of Canadian officers at all levels, the issue of delegating *command* is actually a pretty simple one. The Chief of Defence Staff (CDS), who possesses full command[14] authority, delegates command authority downward through various commanders in the chain of command, right down to officers at the tactical level who are executing air operations. In a typical operation, the CDS delegates operational command (OPCOM) authority to an FE commander, either the Commander of Canadian Joint Operations Command (Comd CJOC) or the Commander of Canadian Special Operations Forces Command (Comd CANSOFCOM).

For domestic operations and global air mobility / intelligence, surveillance and reconnaissance (ISR) operations, Comd CJOC will normally delegate OPCOM authority to the standing joint force air component commander (JFACC) located at the combined air operations centre (CAOC) in Winnipeg.[15] The JFACC will normally further delegate tactical command (TACOM) authority to commanders such as a W Comd or a detachment commander (DETCO) who execute air operations. This chain of command is shown in Figure 3.

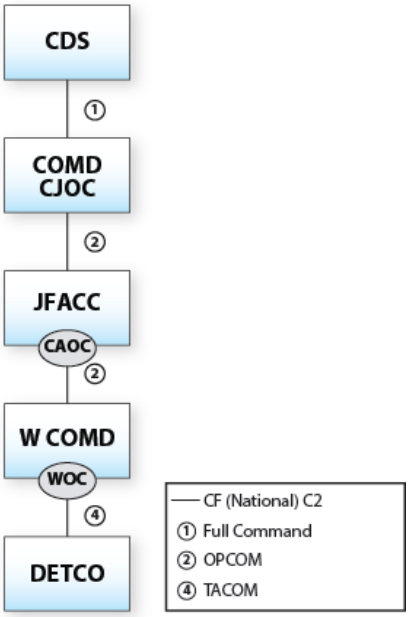

Figure 3. Chain of command for domestic operations including global air mobility and ISR operations

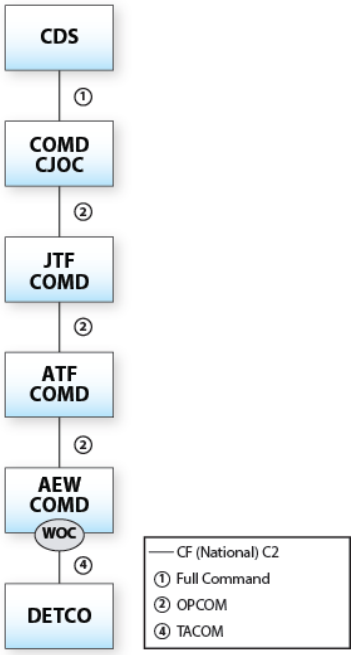

Figure 4. Chain of command for expeditionary operations

During expeditionary operations, FE commanders normally delegate OPCOM authority to the designated joint task force commander (JTF Comd), who further delegates OPCOM authority of the deployed air task force to the air task force commander (ATF Comd). The ATF Comd delegates TACOM authority to the air expeditionary wing commander (AEW Comd).[16] At the bottom of the command chain, yet closest to "the fight," is the DETCO, who exercises command at the tactical level. This chain of command is depicted in Figure 4.

Control. Once the question of delegating command is sorted out, the far more challenging question for commanders of air operations is this: "*Who is best suited to exercise control?"* The answer need not be a complicated one. Commanders must determine, ahead of time, which elements of the theatre air control system (TACS) will be required to effectively plan, coordinate, task and retask air power on a continual basis during the operation. Controlling air power has come a long way since the Second World War when commanders watched bombers as they departed on missions and counted them six hours later when they returned. In order for air power to be relevant to the modern joint force commander, it must be agile and flexible, able to be quickly redirected where needed, no matter what part of the mission an aircraft might currently be in. Ensuring this happens is more the realm of *control*, not *command*. The successful centralization of control of air power relies upon the control specialists within the TACS.

Theatre air control system.[17] RCAF operations are controlled through the overarching TACS which is centred on the JFACC, who employs the CAOC to direct, coordinate and control theatre-wide air-power operations. In principle, any ACC (including the variations of CFACC, JFACC and CJFACC)[18] exercises (at a minimum) operational control (OPCON) of assigned and made available air power on behalf of the JTF Comd. To be clear, the ACC *commands* the combination of staff and air operations centre (AOC) that together comprise the air component headquarters (ACHQ) but *controls* assigned and made-available air power. When the JFACC in Winnipeg (or an ACC deployed for a given operation) requires an operational-level presence forward, the tailor-made air component coordination element is employed. This team, led by an ACCE director,[19] is responsible for conducting operational-level planning and coordination on behalf of the JFACC, in order to facilitate the integration of air effects into joint operations. See Figure 5 for the depiction of this "chain of control."

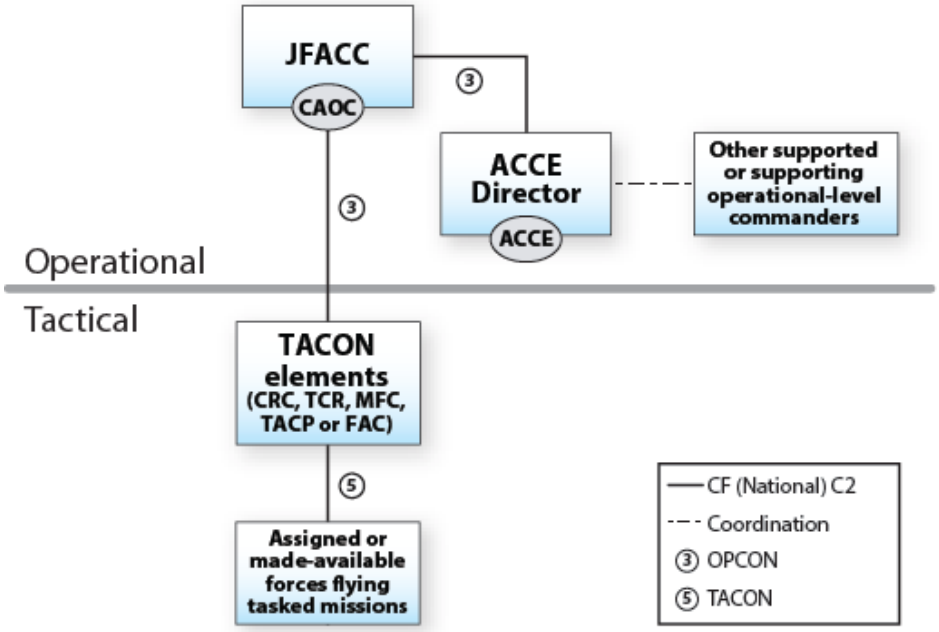

Figure 5. CF TACS as part of the RCAF "chain of control"

At the tactical level, the ACC relies upon a network of control entities to exercise tactical control (TACON) and ensure the plan is executed effectively, managing the many variables that are both anticipated and unexpected. What the TACS does well for a commander is permit the rapid retasking of aircraft to a new or revised mission while they are airborne. Examples of TACON elements include a control and reporting centre (CRC), tactical control radar (TCR), airborne warning and control system (AWACS), maritime fighter controller (MFC), tactical air control party (TACP) and, at the very end of the control chain, the forward air controller (FAC). If you are not considering the employment of these elements of the TACS in your operation, your ability to *control* air power will be significantly limited. The good news is that the RCAF possesses all of these TACS elements (with the exception of AWACS), and they are, on the whole, ready for deployment.

Summary

Critical to the success of any force employment operation is the understanding of the differences between command and control. Air-power operations, due to their complex nature, require that both planners and commanders carefully consider how they will structure their C2 system. In order for the tenet of "centralized control and decentralized execution" to be successfully exploited, command must be considered separately from control. It is through this lens that the RCAF can effectively employ a C2 process that permits commanders at all levels to effectively execute a centrally controlled and agile plan. Commanders must employ specialist units from the TACS to ensure control of air power is exercised smoothly on their behalf. The goal will always be to create a C2 process that permits a commander to efficiently run a theatre-wide air operation, measurably streamlining coordination and reducing confusion.

In the end, the RCAF has all the required elements to make the command and control of air power work. All that remains is to continue educating personnel about sound C2 principles, the same ones, incidentally, that our allies are currently using. By asking the question, "command or control?" during the planning stages of an operation, we can stack the odds in our favour before we even deploy, once again proving Sun Tzu correct.

Abbreviations

ACC	air component commander
ACCE	air component coordination element
ACHQ	air component headquarters
AEW Comd	air expeditionary wing commander
AOC	air operations centre
ATF Comd	air task force commander
ATO	air tasking order
AWACS	airborne warning and control system
B-GA-401	B-GA-401-000/FP-001, *Canadian Forces Aerospace Command Doctrine*
CAOC	combined air operations centre
CDS	Chief of Defence Staff
CF	Canadian Forces
Comd CJOC	Commander Canadian Joint Operations Command
CO	commanding officer
CRC	control and reporting centre
C2	command and control
DETCO	detachment commander
FAC	forward air controller
FE	force employment
ISR	intelligence, surveillance and reconnaissance
JFACC	joint force air component commander
JTF Comd	joint task force commander

MFC	maritime fighter controller
NATO	North Atlantic Treaty Organization
OPCOM	operational command
OPCON	operational control
RCAF	Royal Canadian Air Force
TACOM	tactical command
TACON	tactical control
TACP	tactical control party
TACS	theatre air control system
TCR	tactical control radar
W Comd	wing commander
WOC	wing operations centre

Notes

1. This is the first in a series of short articles on the subject of command and control in the RCAF. For more detailed information, consult B-GA-401-000/FP-001, *Canadian Forces Aerospace Command Doctrine*, found on the Internet at http://www.rcaf-arc.forces.gc.ca/en/cf-aerospace-warfare-centre/aerospace-doctrine.page and the Defence Wide Area Network at http://trenton.mil.ca/lodger/CFAWC/CDD/Doctrine_e.asp, both sites accessed October 29, 2013.

2. Sun Tzu, *The Art of War*, trans. Ralph D. Sawyer (New York: Barnes and Noble, 1994), 184. The author appreciates that you knew full well Sun Tzu or Carl von Clausewitz would get quoted at some point in this article.

3. B-GA-401-000/FP-001, *Canadian Forces Aerospace Command Doctrine* will be abbreviated as B-GA-401.

4. Principally the B-GJ-005-300/FP-001, Canadian Forces Joint Publication, CFJP 3.0, *Operations*.

5. Generally the AJP-3.3(A), *NATO Joint Air and Space Operations*.

6. The same can be said for its offspring such as command, control and communications (C3); command, control, communications and computers (C4); and command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR).

7. *Defence Terminology Bank*, record 27866.

8. Ibid., record 375.

9. Ibid., record 5950.

10. Department of National Defence, B-GA-401-000/FP-001, *Canadian Forces Aerospace Command Doctrine* (Trenton, ON: Canadian Forces Aerospace Warfare Centre, 2012), 4.

11. Normally, the ACC only *commands* the air component, comprised of the necessary staff and AOC personnel assigned to the ACHQ of a given operation.

12. "Flying the frag" is a term that dates back to the Vietnam War where complex flying orders were promulgated from a centralized location, being distributed to subordinate headquarters and flying units, expanding downward and outward in a fragmenting method. The "fragmentary flying order" was the forerunner of the modern ATO.

13. The CF philosophy of mission command, which emphasizes that only the requisite amount of control should be imposed on subordinates, argues in general for less centralized measures of control.

14. For detailed definitions of the various levels of command and control authorities, see Ibid., 6–8.

15. As established by the CDS Directive on Canadian Armed Forces Command and Control and the Delegation of Authority for Force Employment, 28 April 2013.

16. W Comds and AEW Comds both employ a wing operations centre (WOC) to coordinate upwards with the CAOC, laterally with other wings and downwards with assigned units/squadrons/detachments/elements to coordinate the details associated with command of air power at the tactical level.

17. Detailed descriptions of the element of the TACS can be found in *Command Doctrine*, 22–25.

18. CFACC – combined force air component commander; and CJFACC – combined joint force air component commander.

19. For a detailed description of the duties/responsibilities of an ACCE and ACCE Director, see *Command Doctrine*, 27–29.