CANADIAN FORCES COLLEGE - COLLÈGE DES FORCES CANADIENNES
AMSP 9 - PSEM 9

INTEROPERABLITY: The Key to CF Coalition Operations.

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ABSTRACT

The end of the Cold War has heralded new and unique challenges and opportunities for the Canadian Forces (CF). As such, Canada has had to participate in an unprecedented number of inter and intra state conflicts throughout the globe, all in the name of broader global peace and security. This participation has been in the form of a variety of quickly assembled *ad hoc* multinational coalition operations, involving a plethora of non-traditional NATO allies in many different areas throughout the world. This paper will demonstrate that the key feature of interoperability is crucial to successful Canadian participation in successful coalition operations in the 21st Century. Due to scope limitations of this paper, the entire spectrum of military interoperability cannot be reasonably examined. Therefore, interoperability attributes of Doctrine, Command and Control (C2), and Communications and Information Systems (CIS), shall be used to demonstrate the CF's successes in recent coalition operations.

> As the operational environment has evolved, the Canadian Forces have had to work more closely with their allied counterparts. They have made enormous strides in this direction.
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> Interoperability – the ability of armed forces to work together effectively on operations – will remain an essential ingredient in future multinational operations.[1]

The collapse of the Berlin Wall and the end of the Cold War heralded an unexpected new and peaceful era for Canada and the international community. Paradoxically, the Canadian Forces (CF) operational tempo has increased dramatically in over the last fifteen years. From a security perspective, the world has become increasingly complex in contrast to the armed stability of the Cold War. In the last fifteen years, there have been a host of intra-state conflicts, failed states as well as an associated host of human security challenges. The countries involved included Cold War states as well as African and Asian states. However, the post Cold War paradigm shift is seen through the heightened will of the global community to intervene in the name of greater international good and stability. As a result, DND has seen the "number and size of [CF] missions relative to available forces – tripled [from 1991 to present] compared to the period between 1945 and 1989."[2] Since 11 September 2001, asymmetric warfare and the Global War on Terrorism (GWOT) have exacerbated already difficult and complex military operations. Thus, the international community called upon Canada to provide military assistance in such locations as the Persian Gulf in 1991, the Former Republic of Yugoslavia, Somalia, Haiti, and Sudan to name but a few. The vast majority of these military operations have been conducted within an international multilateral context. That is to say, the CF has deployed as part of a larger coalition operation, involving many of its force structure capabilities in joint and/or combined constructs.[3]

Indeed, this requirement for the CF to participate in future coalition operations was confirmed in Canada's 2005 Defence Policy Statement (DPM): "At the same time, consistent with international legal norms, when the will of the international community is clear, we [Canada] will also consider participating in less formal coalitions of like-minded states, as we have seen in the international campaign against terrorism."[4] But what of these coalitions and what essential criteria must be met by a medium power such as Canada, for these coalition operations to be successful? While still committed to NATO, the CF has demonstrated its ability to successfully participate in coalition operations outside of NATO's influence.

Fundamentally, the key feature of *interoperability* is crucial to successful Canadian participation in future coalition operations. The 2005 DPM goes on to further state that "Interoperability – the ability of armed forces to work together effectively on operations – will remain an essential ingredient in future multinational operations."[5] What is interoperability and what amount/type of interoperability is necessary for the CF to continue to successfully participate in future coalition operations?

Given that interoperability is fundamentally the key crucial feature for successful coalition operations in the 21st Century, then clearly CF military interoperability is a vital element in the success of future coalition warfare at the operational level of conflict. This paper argues that military Doctrine, Command and Control, and Communications and Information Systems are three important interoperability attributes that have been crucial to CF coalition operations in the last fifteen years.

A review of CF participation in recent coalition operations reveals that, while there were many challenges that had to be faced and overcome, Canada's military forces

were able to achieve significant success. Central to overcoming these important challenges is the requirement for the CF to complete its journey towards establishing a truly joint force. At the heart of this Canadian joint goal is the requirement of establishing joint doctrine. Until 1991, there had been very little need for Canadian joint doctrine because the three military services participated individually in the NATO Alliance. While the three different CF Environmental Commands all maintain doctrine, (or some derivative thereof), relatively little Canadian joint military doctrine is available. Canadian doctrine must evolve if the CF is to improve upon its past coalition endeavors and additionally, support a Standing Contingency Force (SCF) based on the sealift capability for a Canadian army contingent and its equipment.[6] A minor but all-important adjunct to doctrine is the issue of Rules of Engagement (ROE). The compatibility of ROE amongst coalition partners is essential, particularly given the complex nature of recent operations. From naval operations in the Arabian Sea to land force operations in East Timor, there is a coalition requirement to work from compatible ROE. A common understanding of Command and Control (C2) is also essential amongst all coalition members. Canada's flexible and adaptable approach to C2 of CF military units in coalition operations has been successful. In addition, many lessons have been learned and must be formally incorporated into Lessons Learned and/or Doctrine for future use. While not to be dealt with in specific technical detail, the criticality of basic and effective communications between various international military units is not to be underestimated. Canada's ability to communicate between Canadian units as well as those of coalition members has proven to be very successful in the past. Further, Canada's ability to remain on the technological cusp of communications and information systems has proven

to be crucial in past successful operations. While these successes can be enjoyed, Canada must continue to invest in communications technology if it is to remain current with significant partners such as the US and the UK. Before discussing military doctrine, it is appropriate to provide a contextual framework of military interoperability.

Interoperability today is multifaceted and complex, and is crucial to any successful military coalition operation. However, the subject of military coalition interoperability is multifaceted and complex. But exactly what does it mean by being interoperable with coalition partners? The Oxford English dictionary defines interoperability as: "Able to operate in conjunction. For example: Sometime in the mid 1970s the communications...will not only be interoperable among themselves, but with United States, Canadian and Australian services also."[7] Within the military context, Myron Hura *et al* consider the following general definition of interoperability to be: "The ability of systems, units, or forces to provide services to and accept services from other systems, units, or forces, and to use the services so exchanged to enable them to operate effectively together."[8] However, these two definitions are both too narrow as they focus only on the technological dimension of interoperability, namely communications and information management. The concept of military interoperability is more that just technical communication and information systems that can generate and receive data between two or more military units. Hura's definition fails to consider other less tangible, but equally important attributes of interoperability. In contrast, the US Armed Forces Joint Doctrine for Multinational Operations manual provides the following extensive definition:

> International Rationalization, Standardization and Interoperability (RSI) with allies, coalition partners, and other friendly nations is important for achieving: the closest practical cooperation among their military forces; the most efficient use of research, development, procurement, support, and production resources; and the most effective multinational warfighting capability. International military RSI applies to both material and non-material matters.[9]

This definition expands upon the previous definition in that it considers collaborative research and development, procurement, support and production efforts to support multinational warfighting capabilities. This suggests further collaborative efforts towards design, engineering, industrial and trade patterns which would be mutually beneficial for coalition members. This 'material' and 'non-material' dimension of interoperability is further supported by Kenneth Gause *et al,* who posit that military coalition interoperability spans the complete spectrum of conflict. Gause suggests that there are three types of military coalition interoperability, each characterized with discreet interoperability attributes. The first type is technical interoperability which focuses on how military units from different countries provide service exchanges such as communications, information, intelligence products, and equipment. Gause's second interoperability type is operational interoperability, which considers how different multinational military organizations can come together and fight as one entity to accomplish the mission. This type would include doctrine, planning, training, and logistical support. Gause's final interoperability type is political/cultural interoperability which considers how and why different countries fight from a cultural, linguistic, social and historical perspective.[10] At a more granular level and within Gause's interoperability framework, LCol Wayne Silket offers succinct series of tangible military interoperability attributes: Goals, Training, Capabilities, Equipment, Logistics, Culture, Doctrine,

Intelligence and Language.[11] Additionally, another scholarly interpretation of interoperability provided by Robert W. RisCassi adds the attributes: Campaign, Planning, Integrations, Command and Control, Logistics, and Command, Control, Communications, Computers and Intelligence (C4I) to Silket's list.[12] Given this understanding of military coalition interoperability, as well as definable and tangible coalition interoperability attributes, has the CF progressed in developing its coalition interoperability expertise since the end of the Cold War? Doctrine, Command and Control, and Communications and Information Systems are the key attributes of interoperability that have led the CF to successful coalition partnerships.[13] Analysis of research materials indicates that these three attributes have been the most prominent in recent CF coalition operations.

CF Doctrine

Military doctrine is the basis from which all military missions and tasks are conducted within a Canadian historical context. The CF Doctrine Development Manual defines doctrine as: "…the fundamental principles by which the military forces guide their actions in support of objectives. It is authoritative but requires judgment in application."[14]

To illustrate, the Canadian Navy will celebrate its centennial anniversary in 2010. In its very beginnings, the Royal Canadian Navy (RCN) drew many of its original traditions, culture and doctrine from Britain's Royal Navy (RN). Today's Canadian Navy is currently the smallest of the three military services within Canada. From its inception in 1910, the RCN was created as part of a great imperial force and within a

global maritime network. It was built and created for imperial defence. During WWII, Canada's RCN participated as an adjunct of the RN, and within the larger allied effort against axis powers

Subsequently, Canada's contribution to NATO's Cold War Alliance efforts did not significantly change employment of Canada's military forces from the Second World War era. Canada's operationally available army and air forces were forward deployed in Europe and were meant to contribute to the larger NATO combined effort. Thus, the Canadian military services were part of the NATO Alliance, and they used standardized NATO doctrine.[15] These Canadian units reported to the larger NATO command and control organizations. In the case of the Canadian army and air force units forward deployed in Europe, there was no need for Canadian specific doctrine.[16] Remaining assets were focused on NORAD, domestic and training duties. So too was the case for the RCN. Relying on past precedence, Canada continued to rely upon RN and NATO doctrine throughout the Cold War period. The RCN's principal role was the protection of the Atlantic Ocean Sea Lines of Communications against Soviet submarines (i.e. Anti-Submarine Warfare - ASW), thereby allowing North American re-enforcements to counter Soviet hostilities in Europe. The RCN was best suited to this trans-Atlantic ASW role given its experiences during the Battle of the Atlantic in WWII. Thus, there was little reason to consider the creation of RCN or Canadian naval doctrine.

The new post Cold War era has brought a new and challenging security environment requiring greater contingency planning from the undermanned naval headquarters of Canada's smallest service. Cdr Ken Hansen explains that the Canadian navy has always suffered from insufficient qualified staff planning officers, capable of

creating original and unique Canadian naval doctrine as well as badly needed joint doctrine required of today's CF.[17] Thus, without these naval staff officers dedicated to the creation of Canadian made naval doctrine, Canada's naval service was required to rely upon a collage of NATO, USN and RN doctrine standards. Ironically, this lack of Canadian made naval doctrine facilitated naval interoperability at both the operational and tactical levels of conflict. Similar doctrine historiographies can be traced for the Canadian army and air force.

Doctrine Analysis

As indicated above, there had been very little reason to stray from standard NATO doctrine after the Cold War. NATO doctrine had been continuously relied upon during the Cold War, and had served the Canadian military services well until 1998:

> Another major reason that Canada was able to successfully plan, deploy and execute the mission in Kosovo can be attributed to Canada's long-established and proven working experience within NATO. Countless exercises, an established common doctrine, equipment and procedural interoperability, and a familiar multinational working relationship at all levels enabled the J-staff to effectively plan and co-ordinate the operation.[18]

Canada's participation in Kosovo (OP ECHO) in 1998 clearly demonstrated that Canadian doctrinal culture was still that of NATOs.[19] It also demonstrated that Canada had the doctrinal basis for coalition interoperability with allies. Returning to the aforementioned naval analogy, Cdr Ken Hansen explains that only properly educated, trained and experienced naval staffs can write properly prepared Canadian naval doctrine as well as Contingency Operating Plans (COPs). These plans require extensive effort to compile and are used to execute unexpected and emergency tasks: "These plans must be

written in terms that are comprehensible to the ultimate users and must be pertinent to their capabilities."[20] This truly developed Canadian doctrine shall be particularly important in the future as Canada shall acquire a sealift capability (i.e. the magnitude of which is yet to be determined) that will significantly increase the globally deployable characteristic of a joint CF capability package. This particular capability will form the core of a maritime Standing Contingency Force (SCF), which will represent a completely new joint capability in the CF. Therefore, as core joint doctrine between the Canadian navy and air force as well as army and air force already exists, doctrine will be required to address the Canadian army and navy relationship and to complete the joint CF triad.

While the above example is based upon the Canadian navy doctrinal situation, the same can generally be said for its two sister services – the Canadian army and the Canadian air force. As an addendum and to further illustrate common coalition doctrine, the issue of Rules of Engagement (ROE) is seen as a favorable interoperability characteristic from a coalition perspective and in particular from our U.S. and U.K. allies.[21] Canadian ROE are considered to be very robust by international standards and by Canada's allies, thereby providing Canadian commanders with significant latitude in the application of force, in support of the operational campaign.[22]

There remains a significant CF doctrinal question to be answered. Do the Canadian military environmental doctrine sets need to be completed, given the CF's relative success thus far? Research on this point reveals that the need to complete the three environmental service doctrinal packages remains inconclusive. It is suggested that in many cases, these Canadian environmental doctrinal gaps have already been filled with Tactics, Techniques and Procedures (TTPs) or Standard Operating Procedures (SOPs)

within the three individual services. Therefore, it is recommended that CFs limited doctrine development resources focus on the development of tri-service or CF Joint Doctrine in anticipation of Canada's forthcoming SCF capability. From a naval coalition perspective, the NATO doctrinal standards have served the Canadian navy well in the last fifteen years, and therefore, Canada should continue to contribute to the evolution of NATO doctrine. Differences in international doctrinal standards (i.e. NATO, U.S., U.K. and Canada) are to continue to be reconciled prior to coalition operations, as has been the case thus far. This has usually been accomplished through a plethora of pre-deployment staff talks and meetings. Particularly, it is imperative that common terminology be made clear amongst all coalition partners. Additionally, this rationalization of differing doctrine standards should be continued to be facilitated through the frequent use of military Liaison Officers (LOs).[23] Finally, doctrinal differences can be resolved through the conduct of joint and coalition training should the timing and opportunity permit.

In sum, attaining joint and coalition doctrinal capability supports Canada's flexible and responsive national security strategy policy. From a joint viewpoint, while the requirement to complete environmental doctrinal sets for the three CF services is inconclusive, there remains a considerable requirement to develop CF joint doctrine in anticipation of the SCF. Canada's recent successful participation in international coalition operations are a result of our past NATO experiences using standardized NATO, U.K. and U.S. doctrine sets. Common coalition doctrine has led to Canada's successful participation in recent coalition operations and will continue to stand the CF in good stead in the future. This analysis further recommends that the CF continue to make use of military Liaison Officers and common multinational training exercises (i.e. as

regularly demonstrated by the Canadian navy and air force) to facilitate the resolution of differing national and NATO doctrinal discrepancies. Closely associated with military doctrine, Canada's CF military Command and Control structure is crucial to effective interoperability with coalition partners.

CF Command and Control

CF Command and Control must be considered from a narrow rather than a broad perspective. Further, the issue of Command and Control is a practically-based problem. At the operational level of conflict, the Command and Control (C2) structure is crucial to success or failure when pursuing the strategic objectives of one's nation or those of an alliance or coalition. From an academic point of view, Canadian army doctrine defines C2 from two different perspectives:

> The first sees command as the authority vested in commanders and control as the means by which they exercise that authority. The second sees command as the act of deciding and control as the process of implementing that decision. These views are compatible in that they both view command and control as operating in the same direction: from the top the organization toward the bottom.[24]

In the interests of brevity, the academic doctrinal concept of C2, at the operational level of war, is imbedded in a larger overall strategic context presented at Note C of Annex A.

Taken together, C2 refers to the framework in which more than one CF element may be required to work and co-operate to achieve and complete a common mission. Based on Canadian military doctrine, this framework establishes the reporting relationship between commanders and sub-ordinate commanders. Looked at from a different perspective, the "Command and Control organization establishes lines of

authority and responsibility and information channels, and identifies which commanders are empowered to make which decisions."[25] Not to be construed as being too rigid, this framework must maintain the necessary attributes of flexibility and adaptability so as to adjust to changing circumstances resulting from the natural progression of operations and campaigns, as well as from dynamic strategic objectives.[26] At the operational level and within a coalition context, the CF has proven to be very adaptable at fitting into the larger C2 organizations of UN and NATO force structures, as well as those US led coalition operations.

C2 Analysis

During the Cold War, Canada typically provided its operational military capabilities to the larger combined military C2 organizations of NATO. However, since the end of the Cold War, Canada has taken a number of appropriate initiatives towards its demonstration of Canadian autonomy within international coalition structures rather than a larger and mostly ubiquitous NATO Alliance.

Looking back, the end of the Cold War was interpreted to mean a new and enduring peace for mankind. As such, many western democratic societies began searching for the elusive 'peace dividend'. This perception caused many democratic societies to review their military organizations in an effort to rationalize and realize financial savings for other national priorities. Canada was no exception and undertook many of these same 'cost trimming' exercises. From a Canadian perspective, military expenditures were cut to a bare minimum and the reduction of various headquarters' staff and their affiliated C2 structures were not exempted. No one foresaw the 1991 Persian

Gulf War and the requirement for Canada to make a significant contribution in a coalition context, rather than as an alliance member.[27]

From a Canadian C2 perspective, the Persian Gulf War was very significant in that it required the Canadian military to develop quickly an *ad hoc* C2 structure for a Joint Task Force (JTF) Headquarters to command a very 'joint' military capability package. For the first time, Canada appointed a single Canadian military officer to assume command of a naval task group, a CF-18 squadron, a field hospital and other smaller support elements in an international Joint Operating Area (OA).[28] The CF never had the opportunity to command such a diverse group of CF joint military capabilities within the broader context of a coalition. During their Cold War operations, Canada's army, navy and air force had always participated in combined operations as part of a larger NATO or UN alliance. In 1991, Canada's military organizational culture was still within a Cold War/NATO alliance construct. As such and because there had been no Canadian joint doctrine developed for such an operation, the CF C2 structure for the Persian Gulf had to be developed *ab initio* and in an *ad hoc* fashion. Very little doctrinal guidance was available to assist NDHQ staff officers in this regard. Although there were challenges and problems faced by the Canadian Joint Force Commander (Commodore Ken Summers), the Canadian HQ was able to persevere and succeed in the provision of military capabilities to the higher coalition commander. Many lessons were learned from these initial 1991 Persian Gulf War experiences. One of the most important lessons learned is that the design of the Headquarters C2 structure must balance operational needs against strategic national imperatives. These and other lessons were subsequently applied by Col Serge Labbe in Somalia as well as by Captain(N) R. Girouard in East

Timor, where the C2 HQ structure progressively evolved over the course of these different operations.[29] A further improvement over the Persian Gulf HQ was that the Somalia and East Timor C2 organizations were built around 60 military people from 1 Canadian Division Headquarters. Thus, these two latter operations benefited from C2 organizations that were demonstrably tri-service, experienced and cohesive. This is not to say that further challenges or problems were not encountered. However, it does demonstrate that Canada's military C2 organizations were uniquely Canadian and represented the interests and values of an independent and sovereign nation.

Therefore, it is recommended that the CF continue to train and educate its commanders and military staff officers in the concepts of C2, while concurrently espousing the tenets of adaptability and flexibility when entering into coalition operations. Clearly the characteristics of CF C2 flexibility and adaptability have contributed significantly to Canada's past coalition operations.

These three examples of recent Canadian C2 structures within larger coalition organizations illustrate Canadian and CF national autonomy beyond NATOs spheres of influence, in coalition operations at the operational level of conflict. There have been others. However, these three examples serve to demonstrate that Canada possesses the ability to command a JTF and integrate it into a larger coalition. Canada has further displayed the necessary prerequisites to exercise command and control through an appropriate C2 structure, usually within a larger hierarchal organization that is compatible with significant allies and coalition partners. This common interoperability of C2 understanding has been a crucial attribute in Canada's recent participation in coalition operations and will continue to be so in the future. It is recommended that the CF

continue to train and educate prospective military Commanders and staff officers in the concepts of C2 structures, which incorporate tenets of flexibility and adaptability. In order to effectively command and control assigned military units, the commander must be provided similarly effective Communications and Information Systems. These systems are essential in maintaining communications throughout the C2 organization and they ensure a common situational awareness picture is propagated throughout the entire C2 organization.

Communications and Information Systems

Communications and Information Systems (CIS) are essential assets to the commander's decision and direction capabilities. Once decisions have been formulated by the Commander, it is essential that this direction be relayed to the various subordinate commanders within the JFC in an effective and efficient manner. Equally crucial to effective management of operational execution, the Commander must always maintain real-time 'situational awareness' of his operating area.[30] These two issues taken together constitute Command and Information Systems (CIS). The technical aspects of CIS shall not be addressed, as the ensuing analysis will remain at the operational level.

The Canadian Forces Operations manual provides the following definition for Communications and Information Systems (CIS):

> The assembly of equipment, methods, and procedures, and if necessary personnel, organized so as to accomplish specific information conveyance and processing functions.[31]

The "processing" and "conveyance" of information is applicable and is indeed necessary at all three levels of conflict: strategic, operational and tactical, and across to coalition

partners as well. Within a joint CF army, air force and navy structure, it is essential for mission success that the commander possesses the ability to communicate through all three levels of conflict. From a technological perspective, the CIS must adhere to tenets of reliability, security, (namely information protection), robustness, and redundancy to allow Commanders to exercise effective C2 in all environments and situations. Also, the CIS must also be deployable, flexible and adaptable to meet efficiently the many different situations required of domestic and international operations. Finally, from the operational Commander's perspective, an effective and efficient CIS is critical for the Commander to maintain situational awareness of activity within his JOA. The Commander's ability to understand quickly what is going on in his JOA is more commonly referred to as 'situational awareness'. Clearly, contemporary coalition operations are demanding, complex and very dynamic. Thus, it is essential that the Commander be able to liaise and discuss with his sub-commanders, understand the dynamic nature of operations and be able to provide accurate and relevant direction. Further, it is equally important that the Commander be able to "reach back" and communicate with national/international authorities as the JOA campaign plan progresses, and receive guidance/direction as required.

As mentioned above, CIS also provides situational awareness systems that allow the Commander and staff to monitor progress of the campaign. These systems are largely technological and/or synthetic that portray neutral, friendly and enemy forces on the battlefield, in the air or at sea. Commanders receive regular progress reports from subordinate commanders, which are then inputted into the CIS system. Intelligence sources and sensor data are the basis from which enemy force dispositions are established

and inputted into the system as well.[32] The issue of information connectivity is then introduced, whereby different national and international units are able to provide to each other instantaneous updates to the picture, (i.e. process and convey). Thus, the commander is able to maintain a real-time picture of the overall disposition of friendly forces against enemy forces, which he can act upon as required.

Communications and Information Systems Analysis.

Not unlike doctrine, Canada's three military services did not enjoy 'joint' communications during the Cold War. In this era, the three services were part of larger naval, air force and army NATO alliance forces, which were pre-deployed forward to counter the Soviet Union. As such, Canada's three military services possessed the capability to "process" and "convey" information (i.e. equipment, processes/procedures and people) at all three levels of conflict throughout the Cold War, but within their respective environmental "stove pipes". Within the alliance, there was little need, nor opportunity for Canada's three military services to work together.

However, today's contemporary international operations have provided Canada's military forces many more opportunities to work together within different coalition constructs. Within the context of OPERATION APOLLO and Canada's naval contribution, the following national comment was provided:

> Naval Connectivity. Canadian naval elements were able to seamlessly fit into US battle groups because of the ability to connect with US naval C4ISR systems. In particular, the modernized DDH 280 C2 fit is an excellent package and allows Canadian commanders to act as flag officers of coalition task groups. The LIO role puts particular stress on timely information exchange, and the DDH 280 command suite ensured that the Canadian TGs were particularly effective in this role. Circulation of some information was limited by national regulations, but in

> general, connectivity was excellent. The CF must continue to maintain this level of connectivity.[33]

It is clear that the IROQUOIS Class (DDH280) destroyers possess unique communications and C4ISR capabilities that are clearly key to the Canadian navy's ability to integrate and fulfill command roles within a larger coalition force. Canada's Halifax Class Frigates are also easily integrated into a coalition force, but they are unsuitable to exercise command. The DDH280 communications systems were installed in these ships during an extensive mid-life upgrade during the 1990s. As a result, the ship was able to integrate into the larger US led naval Coalition force. From an international perspective, Canada's naval CIS connectivity receives similar compliments, specifically with regards to Leadership Interdiction Operations (LIO):

> The Canadians were the logical first choice for this duty [LIO], as their staff is trained and oriented toward the execution of surface and subsurface warfare. In addition, the Canadian Task Group staff has rules of engagement and communications capabilities closely matched with US forces.[34]

> One way Commander Canadian Atlantic Fleet, and the sea combat commander were able to maintain nearly continuous communications and share vital information was through the use of the Coalition Wide-Area Network. Developed to enhance real-time data sharing through super-high-frequency communications paths, real-time chat, web sites and e-mail, network terminal and servers had been installed into major command-and-control stations… This network facilitated continuous direct communication between the sea combatant commander and his sector commander in real time to share intelligence and operational reports and refine operational goals and plans. As a result, the Canadians became major contributors to the leadership interdiction mission.[35]

It is clear that Canadian LIO successes can be directly attributed to the common technologically based CISs that were common to the Canadian Navy, the USN and other naval forces during this particular coalition operation. These systems included but were not limited to the Coalition Area Wide Network, super-high frequency communications

systems, as well as real-time chat, web sites and e-mail. These systems allowed the sea combat commander to communicate with his subordinate commanders and pass real-time situational awareness reports, intelligence products, surveillance and reconnaissance information. This same CIS system also allowed the Canadian subordinate commander to communicate with his national authorities located in CENTCOM in Tampa Bay, Florida as well as national authorities in Canada. It is through this Canadian investment commitment into these types of communications and information sharing systems that the Canadian Navy was able to take a lead role in the LIO mission in this coalition operation.

Through OPERATION APOLLO and the Canadian Navy's regular City Class Frigate contribution to NATO's Standing Maritime Group, USN Carrier Battle Groups and Expeditionary Strike Groups, Canada's navy was and continues to be able to train and evolve its CIS and connectivity on a regular basis, (i.e. regular naval exercise series include: JTF, RIMPAC, and TANDEM THRUST). It is incumbent upon the Canadian Navy to maintain this level of communications and information connectivity principally with the US, and other NATO allies if it is to continue to enjoy success in future coalition operations.

From a commander's situational awareness perspective, Canada's naval and air forces make use of a system known as "Identification Friend or Foe" (IFF). All Canadian ships and aircraft are fitted with IFF systems, which distinguish themselves to allied/coalition forces as 'friendly'. The IFF system is used by the U.S., U.K. and other NATO countries to ensure alliance and coalition compatibility, as well as to ensure complete situational awareness of all friendly forces in the Common Operating Picture (COP).[36]

In April 2002 and as part of Canada's contribution to OP APOLLO, 3 PPCLI Battle Group (BG) suffered the tragic deaths of four of its members. The 3 PPCLI BG was conducting a live fire training exercise at Tarnac Farm near Kandahar Afghanistan. Tarnac Farm was a former Al Qaeda strong hold that had been converted into a coalition training site. While 3 PPCLI BG was conducting live fire training, a US F16 fighter aircraft mistook the Canadian ground force (3 PPCLI) as enemy combatants and dropped a "Mark 82 500-lbs Guided Bomb Unit (GBU-12) Laser-Guided Bomb (LGB) on the [Canadian] soldiers firing position."[37] The subsequent Board of Inquiry (BOI) revealed: "The planning and subsequent conduct of live fire exercises was entirely consistent with established regulations and coordination procedures, as directed by the CF and the Commander of TF Rakkasan."[38] The board further revealed that the Combined Air Operations Centre (CAOC) in the Arabian Gulf Region were not aware that Tarnac Farm was used as a coalition training area, nor the scheduled live firing exercises on 17/18 Apr 02 by A Co 3 PPCLI. This demonstrated a lack of effective communications and situational awareness of both the TF Rakkassann and the regional CAOC. Among the BOI Recommendations were: "Furthermore, it is a study that is being undertaken in the context of ongoing joint and combined operations wherein Coalition forces of vastly differing capabilities and methods of operation are coming face to face with the vast potential and the great peril implied by high-speed, high-technology warfare in a fluid and uncertain environment."[39]

Clearly, the exigencies of today's modern and complex coalition operations exhibit a blurring and sometimes overlapping construct between the strategic, operational and tactical levels of conflict. Thus, essential to coalition operations, the commander

must have real time situational awareness of the battlefield. Finally, this introduces the final concept of connectivity where this situational awareness picture must be properly and efficiently conveyed, again in real time, to superior or subordinate commanders. Commanders must be able to differentiate quickly between friendly and enemy forces, and be able to act accordingly. America, Britain, Canada and Australia, (i.e. ABCA Standardization Program) have all recognized this problem. However, a comprehensive solution remains outstanding.[40] In so far as communications are concerned, Canada has clearly demonstrated the ability to communicate (i.e. process and convey) information at the tactical, operational and strategic levels of conflict. Thus, Canada must maintain this level of communications interoperability to effectively participate in future coalition operations. This will require effort and resources in order to maintain this capability along with Canada's significant allies (i.e. U.S. & U.K.). Arguably, Canada's most significant contribution to coalition interoperability has been the IRO Class DDH280 Destroyer and its C4ISR suite. During OP APOLLO, the Canadian Task Group was able to seamlessly fit into the larger USN force structure, and was able to assume sub-commander responsibilities for LIO operations on behalf of the Sea Combat Commander. Further, the CIS system provided on this particular Canadian naval platform facilitated an accurate and real-time LIO situational awareness picture that was communicated to the sea combat commander in real-time. Secondly, Situational Awareness or Battle Space Management must be enhanced and improved for the Canadian Army working in coalition operations. Canadian and coalition commanders must be able to quickly and confidently distinguish between friendly and enemy troops on the battlefield and its associated battle space management system. Thus and within the larger context of CIS,

these two recommendations are crucial requirements if the CF is to work seamlessly and efficiently as one organization within future and larger coalition frameworks.

CONCLUSION

In conclusion, interoperability has and will continue to be the key to success for CF participation in coalition operations. From an historical perspective, Canadian military doctrine traces its origins to Canada's colonial past and its close association with the military services of the United Kingdom. Thereafter, it was significantly influenced through its participation in the Cold War NATO alliance, where the three military services did not participate as a joint organization, but rather as contributors to larger NATO forces. Thus, Canada's three principal services did not have a need to operate independently from NATO, and hence, did not require independently created Canadian national doctrine to facilitate interoperability with other nations. In this post Cold War era and recognizing the air forces' already joint capabilities with its sister services, this examination recommends that the limited doctrinal resources be devoted to the creation of Canadian specific joint doctrine that places emphasis on the SCF and the Canadian army and navy joint relationship. Where possible, this doctrine should reflect already recognized NATO and US doctrine.

A common and widely accepted coalition doctrine provides an essential framework for which a unified C2 structure can be designed. A C2 coalition structure must be clearly designed, organized and articulated to all coalition partners. Further, the C2 structure must be robust, flexible and adaptable to change in dynamic circumstances, required of today's rapidly evolving and challenging coalition operations. For Canada's

three military services, there was little reason to deviate from the combined NATO C2 structures as the three CF services were expected to fulfill their pre-planned roles within the Atlantic Ocean and Europe. The 1991 Persian Gulf War witnessed, for the first time ever, a Canadian military officer (i.e. JFC) take command of a joint grouping of CF units. The design of this unique C2 structure took into account the operational requirement of the coalition Commander executing the mission, while concurrently maintaining Canadian national interests and values while deployed in the Persian Gulf. Many lessons were learned from this early post Cold War operation that were put to good use in Somalia and in East Timor. Future CF coalition C2 designs must be based on a properly sized, trained and cohesive team, which must balance operational needs against strategic national imperatives.

Finally, as a result of the exigencies of today's modern and complex coalition operations, there is a growing imperative for operational Commanders to be able to instantly communicate with tactical commanders while simultaneously liaising with strategic authorities. The "processing" and "conveyance" of information must be moved through a communications system that is instantaneous, reliable, robust, secure, adaptable, and exhibit elements of redundancy. CISs must also provide the Commander with the essential technology system(s) that provides critical situational awareness. The commander requires real-time information of both enemy and friendly force dispositions so he is able to provide guidance and direction as required. This introduced the final concept of connectivity where this situational awareness picture must be properly and efficiently conveyed, again in real time, to superior or subordinate commanders.

This CIS (i.e. composed of communications, situational awareness and connectivity) has eluded the CF from a Canadian joint perspective. During the Cold War, there was little justification for joint communications, situational awareness or connectivity. Today's coalition operations require a CIS that possesses efficient communications systems through the three levels of conflict; situational awareness to allow the Commander to differentiate between friendly and enemy soldiers; and the ability to convey this situational awareness picture to superior and subordinate commanders. CIS has been aptly demonstrated through the use of Canada's Command and Control IROQUOIS Class Destroyers during OPERATION APOLLO. However, while there is sufficient technology available to generate the necessary situational awareness picture both in the air and at sea, there remains a significant dearth of similar technology to adequately support situational awareness on land. There is a desperate need to improve the situational awareness through the provision of new and better technology systems that provide the Commander with the necessary real-time information on disposition and location of all friendly soldiers and equipment. Recent fratricide cases involving Canadian soldiers in Afghanistan serve to underscore this CIS requirement. The CF must continue to make important investments in maintaining this excellence in CIS thereby allowing the Canada to effectively and efficiently participate in future coalition operations.

To be clear, the concept of interoperability is extensive and deep. The scope of this examination prevented an analysis from being undertaken on all of the interoperability attributes. However, the scope did allow for the examination of three key interoperability attributes that demonstrate that interoperability is integral and a key

Canadian feature to successful coalition operations. This was not meant to be an exhaustive and comprehensive analysis of coalition interoperability. However, this analysis has served to demonstrate that military Doctrine, Command and Control, and Communications and Information Systems are three important interoperability attributes that have been crucial to CF coalition operations in the last fifteen years. Thus, with continued CF emphasis on these three interoperability attributes, the CF will continue to succeed within the broader context of multinational coalition operations.

[1] Canadian Department of Foreign Affairs, *Canada's International Policy Statement: A Role of Pride and Influence in the World - Defence* (Ottawa: Canada Communications Group, 2005), 9.
[2] Canadian Department of Foreign Affairs, *Canada's International Policy Statement: A Role of Pride and Influence in the World - Overview* (Ottawa: Canada Communications Group, 2005), 11. Indeed, since the end of the Cold War, the CF has repeatedly deployed 4000 military members in contravention of the 1994 White Paper. It is clear at this point in history that there was little sustenance to the predicted Post Cold War 'peace dividend' and that the world now facing the United Nations is one that can be characterized as being dynamic, complex and unpredictable.
[3] Department of National Defence, *B-GJ-005-300/FP-000 Canadian Forces Operations* (Ottawa: DND Canada, 2005), GL-3 & GL-6. Combined is defined as: An adjective that connotes activities, operations, organizations, etc between two or more forces or agencies of two or more allies (GL-3). Joint is defined as: An adjective that connotes activities, operations, organizations, etc in which elements of more than one service participate. (When all the services are not involved, the participating services shall be identified.) (GL-6)
[4] Department of National Defence, *Canada's International Policy Statement: A Role of Pride and Influence in the World – Defence*. (Ottawa: Canada Communications Group, 2005), 24.
[5] Department of National Defence, *Canada's International Policy Statement: A Role of Pride and Influence in the World – Defence*. (Ottawa: Canada Communications Group, 2005), 9.
[6] Department of National Defence, *Leadmark: The Navy's Strategy for 2020*. (Ottawa: Directorate of Maritime Strategy, NDHQ/Chief of the Maritime Staff, 2001), 157-158.
[7] J.A. Simpson and E.S.C. Weiner, *The Oxford English Dictionary*, 2nd ed. (Oxford: Clarendon Press, 1989), 1126.
[8] Myron Hura, *et al*, *Interoperability: A Continuing Challenge in Coalition Air Operations*. (Santa Monica and Arlington: Rand, 2000), 7.
[9] United States, Department of Defense, *Joint Doctrine for Multinational Operations – Joint Publication 3-16* (Washington, DC: Government Printing Office, April 2000), I-10.
[10] Kenneth Gause, et al, *US Interoperability with its High –End Allies*, Center for Strategic Studies, Center for Naval Analyses (Virginia: Center for Naval Analyses, 2001), 4.
[11] Wayne A. Silket, "Alliance and Coalition Warfare," *Parameters* vol. XXIII no. 2 (Summer 1993): 79-82.
[12] Robert W. RisCassi, "Principles for Coalition Warfare," *Joint Forces Quarterly*, Inaugural Issue (Summer 1993), 60-70.
[13] For the purposes of this examination, communications and Information systems (CIS) shall be taken to be a subset of Command, Control, Communications, Computers and Intelligence (C4I). This is a technology based attribute, but the discussion of this attribute shall remain at the operational level, and thus, shall not delve into technical detail.
[14] Department of National Defence, *A-AE-025-000/FP-001 Canadian Forces Doctrine Development* (Ottawa: Canada Communications Group, 2003), 1-3. This is the same definition as provided for in NATO's AJP: Allied Joint Doctrine (B) Page 244.
[15] It is important to note at this point in time, the Canadian Air Force doctrine was influenced by its participation in NATO and Canadian Forces Europe (CFE), as well as its participation in the North American bilateral North American Air Defence alliance with US AF and US Forces.
[16] Garnett, Vice-Admiral G.L. (Ret'd). "The Evolution of the Canadian Approach to Joint and Combined Operations at the Strategic and Operational Level." *Canadian Military Journal*, Vol 3, No 4 (Winter 2002-2003), pp 3-8.
[17] Hansen, Ken LCdr, "Command and Control – Canadian Style: The New Medium Power Dilemma," *Maritime Affairs* (Halifax: Dalhousie University, Fall 2001), 10. Cdr Ken Hansen contends two issues in his paper. 1.) Being the smallest of the three services, the Canadian Navy does indeed possess the necessary sea experienced staff officers to develop appropriate Canadian naval doctrine. However, doctrine development requirement is usually subordinate to other priority requirements. 2.) Given the aforementioned and not necessarily beyond its capabilities, Cdr Hansen argues that the Canadian Navy possesses little experience in the creation of Canadian naval doctrine.
[18] R.R. Henault, Lieutenant-General, "Modern Canadian Generalship in Conflict Resolution: Kosovo as a Case Study," in *Generalship and the Art of the Admiral: Perspectives on Canadian Senior Military*

Leadership, ed. Bernd horn and Stephen J. Harris, 275-300 (St Catharines: Vanwell Publishing Limited, 2001), 279.

[19] OP ECHO was Canada's CF contribution to NATO Stabilization Force (SFOR) & Kosovo (KFOR) in Italy from June 1998 to December 2000.

[20] Hansen, Ken LCdr, "Command and Control – Canadian Style: The New Medium Power Dilemma," *Maritime Affairs* (Halifax: Dalhousie University, Fall 2001), 12.

[21] Department of National Defence. *B-GJ-005-300/FP-000 Canadian Forces Operations* (Ottawa: DND Canada, 2005), GL-9. "Directions issues by competent military authority, which delineate the circumstances and limitations within which armed force may be applied to achieve military objectives in furtherance of national policy."

[22] Captain Phil Wisecup and Lieutenant Tom Williams, USN. "Enduring Freedom: Making Coalition Naval Warfare Work," *Proceedings* Vol. 128/9/1,195 (Annapolis: US Naval Institute, 2002) 53. "The Canadians were the logical first choice for this duty [LIO], as their staff is trained and oriented toward the execution of surface and subsurface warfare. In addition, the Canadian Task Group staff has rules of engagement and communications capabilities closely matched with US forces."

Also see Department of National Defence, *B-GJ-005-300/FP-000 Canadian Forces Operations* (Ottawa: DND Canada, 2005), GL-9. ROE definition: "Directions issues by competent military authorities which delineate the circumstances and limitations within which armed force may be applied to achieve military objectives in furtherance of national policy." In Canada, ROE takes into account the UN Charter, Law of Armed Conflict, Law of Peace, Canadian domestic law and Host Nation laws.

[23] Captain Phil Wisecup and Lieutenant Tom Williams, USN. "Enduring Freedom: Making Coalition Naval Warfare Work," *Proceedings* Vol. 128/9/1,195 (Annapolis: US Naval Institute, 2002) 53.

Also see Captain (N) Roger Girouard. "OP TUCAN," *Maritime Affairs* (Halifax: Dalhousie University, Fall 2000), 26.

[24] Department of National Defence, *B-GL-300-003/FP-000 Command, Land Forces, Volume 3* (Ottawa: DND Canada, 1996), 1-8.

[25] Canadian Forces College. *Command and Joint Staff Officer's Handbook.* (Toronto: Canadian Forces College, 2005), I-1-4/5.

[26] Department of National Defence, *B-GJ-005-300/FP-000 Canadian Forces Operations* (Ottawa: DND Canada, 2005), 2-1.

[27] Department of National Defence. *B-GJ-005-300/FP-000 Canadian Forces Operations* (Ottawa: DND Canada, 2005), GL-2 and GL-3. Canadian Forces Operations Manual defines an Alliance as "the result of formal agreements between two or more sovereign nations for broad, long term objectives." (GL-2). The same publication defines a Coalition as "an ad hoc arrangement between two or more sovereign nations for a common action." (GL-3).

[28] Jean H. Morin and Richard H. Gimblett, *The Canadian Forces in the Persian Gulf: OPERATION FRICTION* (Toronto: Dundurn Press, 1997), 124. "For the first time, two distinct elements of the Canadian Forces had been brought under the baton of a single operational commander….The mechanisms were now in place for the Canadian government to maintain close control of the actions of the military forces on the other side of the world."

Department of National Defence. *B-GJ-005-300/FP-000 Canadian Forces Operations* (Ottawa: DND Canada, 2005), GL-2. JOA definition provided herein.

Also see Commodore Duncan Miller and Sharon Hobson, *The Persian Excursion: The Canadian Navy in the Gulf War* (Clementsport: The Canadian Peacekeeping Press, 1995), 93. Cmdr Summers was vested with operational command of all CF units in theatre. Thereafter, he delegated operational control to US Commanders who executed the military mission.

[29] Hansen, Ken LCdr, "Command and Control – Canadian Style: The New Medium Power Dilemma," *Maritime Affairs* (Halifax: Dalhousie University, Fall 2001), 12. During the Gulf War, there were many challenges associated with creating a suitable and appropriate Canadian Command and Control system. Central to these challenges was the location for the Canadian Joint Force Commander HQ. Within the CFs three military services, there were significant differences in the philosophies of Command and Control. Thus there were significant views on where the Canadian JFC HQ was to be located. Canadian Joint Force Commander Commodore K. Summers chose Bahrain over Riyadh Saudi Arabia because of its close proximity to US NAVCENTs command ships. He felt that this would enhance naval communications. However, in the interests of Canadian national interests as the Joint Force Commander and representing all

Canadian forces, clearly Riyadh Saudi Arabia was the appropriate location due to its proximity of the Theatre Commander's (i.e. General N. Schwarzkopf) HQ. However, his naval partiality prevented him from disclosing his full national and theatre responsibilities. When hostilities commenced to liberate Kuwait, it has been suggested that US naval forces and de facto, combined naval forces were not used to their fullest potential.

[30] Situational awareness is also known as 'battle space awareness' and/or "common operating picture" (COP). Navy lexicon translation: 'Recognized Maritime Picture'

[31]Department of National Defence, *B-GJ-005-300/FP-000 Canadian Forces Operations* (Ottawa: DND Canada, 2005), GL-3. From a technology perspective, CIS shall be mean but not be limited to voice, telephone, satellite communication links, Secure Voice radiotelephone, National Rear Link systems, video-teleconference, messaging, e-mail (information technology and information management), etc.

[32] Department of National Defence, *B-GJ-005-300/FP-000 Canadian Forces Operations* (Ottawa: DND Canada, 2005), 15-1. "It [intelligence] exists at all levels of command to support commanders and their staffs in making effective decisions, by providing them with timely and accurate understanding of the adversary and operational environment." For the purposes of this paper, intelligence is to be understood as the aggregate of signals, electronic, acoustic, imagery, technical and human intelligence sources. All of this intelligence is analyzed, integrated, interpreted and put together or "fused" into one intelligence product that is provided (i.e. disseminated) to the commander for his consideration and action.

[33] Department of National Defence, OPERATION APOLLO LESSONS LEARNED - STAFF ACTION DIRECTIVE (SAD) (Ottawa: Canadian Communications Group, 2003), B – 31/41. Operation APOLLO was Canada's contribution to the War Against Terrorism immediately after the terrorist strikes on New York City and Washington DC on 11 September 2001.

Also see Jean H. Morin and Richard H. Gimblett, The Canadian Forces in the Persian Gulf: OPERATION FRICTION (Toronto: Dundurn Press, 1997), 40. In preparation for the 1991 Persian Gulf War, the CF had taken the necessary steps to install the British Brahams and US STU-III communications systems, thereby significantly expanding its allied communications network systems.

[34] Captain Phil Wisecup and Lieutenant Tom Williams, USN. "Enduring Freedom: Making Coalition Naval Warfare Work," Proceedings Vol. 128/9/1,195 (Annapolis: US Naval Institute, 2002), 53.

[35] Captain Phil Wisecup and Lieutenant Tom Williams, USN. "Enduring Freedom: Making Coalition Naval Warfare Work," Proceedings Vol. 128/9/1,195 (Annapolis: US Naval Institute, 2002), 54.

[36] Ministry of Defence. "Equipment Capability and Logistics," Chapter 4 from *Operations in Iraq – First Reflections*, (London: Director General of Corporate Communications, Ministry of Defence 2003), 22-27. "Mode IV is no0w the system of record. Mode YV is coming next. Mode III is not a discriminator on a battle field." Courtesy of Lieutenant-Colonel Francois Malo Canadian Air Force (CFC – AMSP9). It is further acknowledged that this system is also used on commercial airliners.

[37] Tarnak Farm Board of Inquiry – Final Report, http://foi.missouri.edu/privacyact/Tarnak-Farm-BOI-Exec-sum Eng.pdf#search=%22Canadian%20 Forces%20 fratricide%22 page 3.

[38] Tarnak Farm Board of Inquiry – Final Report, http://foi.missouri.edu/privacyact/Tarnak-Farm-BOI-Exec-sum Eng.pdf#search=%22Canadian%20 Forces%20 fratricide%22 page 8.

[39] Tarnak Farm Board of Inquiry – Final Report, http://foi.missouri.edu/privacyact/Tarnak-Farm-BOI-Exec-sum Eng.pdf#search=%22Canadian%20 Forces%20 fratricide%22 page 10.

[40] LGen. M.K. Jeffrey, Chief of the Land Staff, Address to Standing Committee on National Defence & Veterans Affairs (SCONDVA), http://www.army.forces.gc.ca/Land_Force/english/6_2_1.asp?FlashEnabled=-1, 1 April 2003

Annex A

General Definitions

To facilitate the arguments presented in this analysis, the following definitions have been provided for general reference. All definitions have been taken from the Canadian Forces Operations manual (B-GJ-005-3000/FP-000 dated Ch2 2005-08-15).

Note A. Three Levels of War

The military response to conflict must be inline with national policies and values. The following three levels of conflict shall ensure the conversion of these political policies (i.e. objectives) is converted into military action. This military action must ensure the appropriate standards of clarity, transparency, unity of purpose and perseverance.

Strategic Level of Conflict

"At the top of this hierarchy is the strategic level of conflict. The strategic level of conflict is that level at which a nation or group of nations determines or alliance security objectives and develops and uses national resources to accomplish those objectives. Activities at this level establish strategic military objectives, sequence the objectives, define limits and assess risks for the use of military and other instruments of power, develop strategic plans to achieve objectives, and provide armed forces and other capabilities in accordance with the strategic plans.

Within the context of national security, a nation employs all of its resources – political, economic, scientific, technological, psychological and military – to achieve the objectives of national policy. Military strategy is that component of national or multinational strategy that presents the manner in which military power should be developed and applied to achieve national objectives or those of a group of like minded nations.

Strategy is the sole authoritative basis for all operations. It determines the conduct of all military actions and guides operations by establishing aims, allocating resources, and imposing conditions on military action. The overriding criteria for the conduct of military operations are the strategic objectives. The operational commander's principle task is to determine and pursue the sequence of actions that will serve most directly that objective.

Operational Level of Conflict

The operational level of conflict is the level at which campaigns and major operations are planned, conducted and sustained to accomplish strategic objectives within theatres or areas of operations. Activities at this level link tactics and strategy by establishing operational objectives needed to accomplish the strategic objectives, sequencing events to achieve operational objectives, and initiating actions and applying resources to bring about and sustain these events. These activities imply a broader

dimension of time and space than do tactics: they ensure the logistic and administrative support of tactical forces and provide the means by which tactical successes are exploited to achieve strategic objectives.

The operational level is not defined by the numbers and size of forces or the echelon of headquarters involved. In a large scale conflict, a corps may be the lowest level of operational command. However, in a smaller scale conflict, operational activity can take place at much lower levels. Regardless of its size, a military force tasked to achieve strategic objective, is employed at the operational level.

Tactical Level of Conflict

The tactical level of conflict is the level at which battles and engagements are planned and executed to accomplish military objectives assigned to tactical units. Activities at this level focus on the ordered arrangement and maneuver of combat elements in relation to each other and to the enemy to achieve combat objectives established by the operational level commander.

At the tactical level, forces are deployed directly for battle and combat power should never be viewed in isolation, for tactical success alone does not guarantee strategic success. Battles and engagements generally shape the course of events at the operational level. They become relevant only in the larger context of the campaign and the campaign, in turn, only gains meaning in the context of strategy. A comprehensive view is required to understand that the three level of conflict are inextricably linked."[40]

For purposes of attribution, readers are reminded that these are doctrinal definitions that are taken directly from the cited Canadian Forces Operations manual.

Note B. Doctrine.

Canadian Forces Doctrine:

a.) CF Doctrine provides the fundamental tenets for the employment of military forces to translate the CF mission and strategic objectives into action. More specifically, it provides commanders with underlying principles to guide their actions in planning and conducting operations. While CF and Environment specific doctrine are separate bodies of doctrine, the two must be compatible. All CF plans and operations will be base don the doctrine contained in this publication.

b.) The CF will operate internationally as part of an alliance or coalition. Thus, CF doctrine should be consistent, as far as practicable, with the doctrine of major allies and alliances to provide the capacity to conduct combined operations. Operational effectiveness of the CF depends on the development of doctrine and sufficient personnel, training and equipment to employ it effectively. Procedures should be developed from doctrine so that they will be suitable for use in any operation, with only minor changes to cater for different command structures or variations in force levels, structures and/or capabilities.

Note C. Command and Control

Command

"Command is the authority vested in an individual of the armed forces for the direction, co-ordination, and control of military forces. The CDS [Chief of Defence Staff] exercises command over the CF. Commanders exercise command over their own forces at all levels, under the authority of the CDS, as do subordinate commanders over their own units. Command is further defined in terms of three levels: full, operational and tactical command.

Full Command (also known as National command). The military authority and responsibility of a superior officer to issue orders to subordinates. It covers every aspect of military operations and administration and exists only within national services. The term command, as used internationally, implies a lesser degree of authority that when it is used in a purely national sense. It follows that no alliance or coalition commander has full command over the forces that are assigned to him, as nations, in assigning forces to an alliance or coalition, assign only operational command (OPCOM) or operational control (OPCON). The term "full command" is equivalent to "command" as defined by QR&Os. It applies at all levels of command, from the CDS down to the unit commander. The task force commander (TFCs) cannot assume full command of units assigned or components over which they exercise authority; rather, they are delegated OPCOM of those assets. Within the TF, the subordinate commanders continue to exercise command in accordance with regulations and Environmental doctrine.

Operational Command. The authority granted to a commander to assign missions or tasks to subordinate commanders, to deploy units, to reassign forces and to retain or delegate OPCON and/or tactical control (TACON) as may be deemed necessary. I t does not of itself include responsibility for administration or logistics. OPCOM may also be used to denote the forces assigned to a commander. In the CF, a commander assigned OPCOM may delegate that authority. While OPCOM allows the commander to assign separate employment to components of assigned units, it cannot be used to disrupt the basic organization of a unit to the extent that it cannot readily be given a new task or be redeployed. The commander will normally exercise OPCOM through commanders of subordinate components of a TF. OPCOM of one Environment's units by another Environmental commander may be necessary:
1.) when effective integration of needed;
2.) when the peculiarities of the operation dictate
3.) when the distance from, or communication with higher authority presents unacceptable difficulties.

Operational command also includes operational information, operational maneuver, operational firepower, operational force protection, operational sustainment.
Tactical Command. The authority delegated to a commander to assign tasks to forces under his command for the accomplishment of the mission assigned by higher authority.

It is narrower in scope than OPCOM but includes the authority to delegate or retain TACON.

Control

Control refers to that authority exercised by a commander over part of the activities of subordinate organizations, or other organizations not normally under his command, which encompasses the responsibility for implementing orders and directions.

Operational Control. The authority delegated to a commander to direct assigned forces to accomplish specific missions or tasks which are usually limited by function, time, or location; to deploy units concerned; and to retain or assign TACON of those units. It does not include authority to assign separate employment of components of the units concerned. Neither does it, of itself, include administrative and logistic control. Units are placed under commanders' OPCON so that commanders may benefit from the immediate employment of these units in their support, without further reference to a senior authority and without the need to establish a forward agency. The commander given OPCON of a unit may not exceed the limits of its use as laid down in the directive without reference to the delegating authority. OPCON does not include the authority to employ a unit for tasks other than the assigned task, or to disrupt its basic organization so that it cannot readily be given a new task or be redeployed. Since OPCON does not include responsibility for administration and logistics, that responsibility would have to be clearly specified. A commander assigned OPCON may delegate that authority.

Tactical Control. The detailed and, usually, local direction and control of movements or maneuvers necessary to accomplish missions or tasks assigned. In general, TACON is delegated only when two or more units under the same OPCON are combined to form a cohesive tactical unit. A commander having TACON of the unit is responsible for the method used."

For purposes of attribution, readers are reminded that these are doctrinal definitions that are taken directly from the cited Canadian Forces Operations manual.

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