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MAKING BETTER DECISIONS: THE DEPLOYMENT OF CANCAP AND THE ANALYTIC HIERARCHY PROCESS DECISION MAKING MODEL

Maj D.A. Byrne

JCSP 37

Master of Defence Studies

PCEMI 37

Maîtrise en études de la défense

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Maj D.A. Byrne

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Dedicated to my spouse Bell, who always inspires me.

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ABSTRACT

The use of contractor support for deployed military operations has seen a significant increase since the end of the Cold War. This paper argues that contractor support decision making, specifically for CANCAP, would be improved by the introduction of a decision making model based on the Analytic Hierarchy Process (AHP). The paper reviews and analyzes the history as well as the benefits and risks of contractor support. Civilian theory, specifically agency theory, as well as scholastic works are considered and analyzed for insight. The relevant decision making doctrine of the United States, the United Kingdom, and Canada are analyzed and compared. The Analytic Hierarchy Process is introduced and assessed for its value as a decision making model. A model is then developed and its utility demonstrated by use of an example. The paper concludes that use of an AHP based decision making model during the Operational Planning Process would support and improve decision making with regards to the deployment of CANCAP in support of expeditionary military operations.

MAKING BETTER DECISIONS – THE DEPLOYMENT OF CANCAP AND THE ANALYTIC HIERARCHY PROCESS DECISION MAKING MODEL

"The essence of flexibility is in the mind of the commander; the substance of flexibility is in logistics."
- Rear Admiral Henry Eccles, U.S. Navy

"The line between disorder and order lies in logistics…"
- Sun Tzu, *The Art of War*

CHAPTER 1 – INTRODUCTION

With the recent completion of the Canadian military's involvement in Afghanistan, there has been a requirement within the Canadian Armed Forces to review the lessons learned from the mission and to consider what could be improved upon. The end of the Cold War resulted in an unprecedented number of peacekeeping and peacemaking missions which stretched Canadian military resources significantly. The operational tempo over the 1990s was reaching the point where the military was relying on contractors to perform functions for which it did not have the resources or capability.[1] The military decision to employ contractors was made on an ad-hoc basis to meet the demands at the time for a specific mission.[2]

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[1] David Perry, "The Privatization of the Canadian Military: Afghanistan and Beyond," *International Journal*, Vol 64, No. 3 (Summer, 2009): 689-690, http://www.jstor.org/stable/40542196.

[2] *Ibid.,* 688.

The Canadian military established the Canadian Contractor Augmentation Program (CANCAP) in 2002[3]. CANCAP was put to the test with the Canadian deployment to Afghanistan; the CANCAP II contract was recently awarded to SNC-Lavalin PAE for 10 years in August 2013, with a value of approximately $ 400 million.[4]

At the current time, there is no large overseas commitment of Canadian military forces which requires contractor support. With the 2015 change in government from Conservative to Liberal, there is a degree of apprehension within the military leadership that the "dark decade" of the 1990s with its pay freezes, military downsizing, and high operational tempo may return. [5] The winds of change are constant within the international political arena. It is probable that sometime in the near future, Canada may be approached by either the United Nations, or as part of a coalition, to deploy a large number of military personnel to an inhospitable theatre of operations which will require the deployment of contractor support to sustain any Canadian military presence. For example, if some peaceable solution is found to end the Syrian civil war with the associated Islamic State in Syria (ISIS) campaign which is ongoing, Canada could be requested to deploy a sizeable military presence to help enforce the peace. If a Battle-Group and a group of helicopters were to be deployed to enforce the peace, contractor support, including CANCAP, may need to be deployed.

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[3] *Ibid.*, 689.

[4] Onsite Magazine, "CANCAP Contract Awarded to SNC-Lavalin PAE Inc.," accessed 20 September 2015, http://www.on-sitemag.com/news/Feds-award-CANCAP-contract-to-snc-lavalin-pae-inc/1002521100/?&er=NA;.

[5] Ottawa Citizen, "Top General Calls Liberal Rule 'Decade of Darkness,'" accessed 22 September 2015, http://www.canada.com/ottawacitizen/news/story.html?id=d569d0fb-d9cf-4119-84cb-39dd89571625;.

Given an environment of scarce resources, strategic risks and global military commitments, it is essential that any decision to deploy CANCAP must be done in a consistent manner which considers many factors. Significant federal government financial resources are involved with any such deployment, as well as the associated risks to Canadian military personnel, contractor personnel, and mission success. Strategic impacts, such as long term sustainability of military support trades, must be considered as well. As Martin Van Creveld pointed out in his landmark study *Supplying War*, a commander must consider logistics factors when planning a battle or campaign or risk military ruin as has happened throughout human history.[6] In the current military environment with contractors effectively being part of the force structure, it is essential that contractors are considered as part of any logistical planning from the outset.[7]

ARGUMENT

The use of contractor support by the Canadian military over the past twenty years has significantly increased. Contractor support has evolved to become an important factor in the support of Canada's military forces. The Canadian military is not using a model to support decision making on deployment on contractor support during the planning process. This paper will argue that a decision making model using the analytic hierarchy process (AHP) would

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[6] Martin Van Creveld, *Supplying War: Logistics From Wallenstein to Patton* (Cambridge: Cambridge University Press, 1977), 1-2.

[7] Christopher Kinsey and Mark Erbel, "Contracting out Support Services in Future Expeditionary Operations: Learning from the Afghan Experience," *Journal of Contemporary European Research.* Volume 7, Issue 4 (Winter 2011): 545, accessed 25 September 2015, http://www.jcer.net/ojs/index.php/jcer/article/view/348/309;.

support and improve decisions to deploy contractor support into the battlespace. This paper will develop an AHP model and demonstrate its utility in an example.

SCOPE

The paper will first show contractor support's importance by establishing a foundation of relevant definitions, literature, history, and rationale for the use of contractors. Associated civilian theory will be reviewed to consider the theoretical basis for contractor support. The paper will review how contractor support decision making is currently done through review and comparison of some western militaries' doctrines regarding the planning process. The AHP will be introduced and used as a basis to develop a decision making model through an example which will demonstrate the model's ability to support improved contractor support decision making. To begin, definitions will be clarified.

DEFINITIONS

There are different categories of contractors which are normally involved in military operations. Pursuant to Canadian doctrine, the following are the types of contracts normally present during military operations:

> **Pre-facilitated contracts**. Pre-facilitated contracts are multi-year contracts that are used to bundle procurement of related goods and services to support operations in a more cost-effective manner (such as equipment systems) or for direct delivery from industry on an as-required basis. Some examples include:
> (1) **In-service support contracting**. This long-term, performance-based contracting arrangement may be employed to support major CAF equipment platforms, normally arranged concurrently with the acquisition of the new platforms.
> (2) **Foreign military sales (FMS).** FMS is a US program that was established to allow the US Department of Defence to sell defence articles and services to authorized foreign countries and agencies (such as NATO). The DND FMS program is part of the departmental procurement system wherein the US Department of Defence is another source of supply.

> (3) **Task order contract.** Task order contracts are established with a single contractor to provide a wide range of support. The Canadian Forces Contractor Augmentation Program (CANCAP), which provides services such as equipment maintenance, food services, transportation, CIS, engineering, accommodations support, and materiel management and distribution, is an example of a task order contract.
> (4) **Direct with Trade/Local Procurement**. This method is used to provide services that cannot be provided by CAF resources or the contracting methods described above. It is often used to provide life support services, construction materials, miscellaneous general and technical stores, transportation services, and locally engaged contractors such as cleaners, labourers, or interpreters. [8]

For this paper, given the above definitions, the focus will be on a type of pre-facilitated contract, namely the task order contract. Whenever contractor support is discussed, it is referring to task order contract support, such as CANCAP, unless otherwise stated. CANCAP is a task order contract that provides a wide range of support services as indicated in the task order contract definition.[9] CANCAP services include food services, materiel management and distribution, communications and information systems, land equipment maintenance, transportation, accommodation management, construction engineering including power and water supply and distribution. Other CANCAP services include but are not limited to waste management, facilities operation and management, fire services, airfield services, and mortuary services.[10]

There are similar programs and doctrine with Canadian allies that will be referred to throughout the paper. In the United States, the term operational contract support (OCS) is used and is defined as:

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[8] Department of National Defence, B-GL-005-400/FP001 *Canadian Forces Joint Publication 4-0 Support* (Ottawa: DND Canada, 2014), 2-20.

[9] *Ibid*.

[10] Assistant Deputy Minister (Materiel), "CANCAP II Briefing September 2013," (presentation to Treasury Board meeting in Ottawa, Ontario, September 2013).

> the process of planning for and obtaining supplies, services, and construction from commercial sources in support of joint operations along with the associated contractor management functions. Successful operational contract support is the ability to orchestrate and synchronize the provision of integrated contracted support and management of contractor personnel providing that support to the joint force in a designated operational area.[11]

The United States military doctrine has its own definition for the Canadian task order contract. US Army doctrine refers to external support contracts which "are often used to provide significant logistic support and selected non-logistic support to the joint force.... The type and scope of this support varies between operations, but can be very extensive depending on a variety of operational factors."[12] The United States Army external support contract version of CANCAP is called the Logistics Civil Augmentation Program, LOGCAP.[13]

The United Kingdom (UK) military uses the term "contractor support to operations (CSO)" to cover all contracted support to its operationally deployed military elements and defines it as:

> all forms of contractor support replacing what was previously known as Contractors on Deployed Operations (CONDO). Contractor Support to Operations encompasses CONDO, Contractor Logistic Support (CLS), where in-service equipment is maintained under contract with the equipment provider and the use of contractors through the PJHQ Contractor Logistic (CONLOG) contract where a range of services can be provided from a long term commercial contract.[14]

Under CSO, the United Kingdom uses Service Provision Contracts which provides a wide variety of services such as food supply and catering, accommodation and facilities management,

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[11] United States, Department of Defence, *Joint Publication 4-10 Operational Contract Support* (Washington, D.C.: GPO, 2008), I-2.

[12] *Ibid.,* III-8.

[13] *Ibid*., p. B-5

[14] United Kingdom, Ministry of Defence, *Joint Doctrine Publication 4-00 Logistics for Joint Operations, Third Edition* (Shrivenham: Ministry of Defence, 2007), Lexicon-9.

infrastructure construction, conservancy services, communications services and facilities, airfield management and support services, and interpretation.[15] The UK version of CANCAP was called the Contractor Logistics enabling contract (CONLOG) which was managed through the Permanent Joint Headquarters (PJHQ) of the UK military.[16] CONLOG was replaced with the Operational Support Capability Contract (OSCC) after 2010; OSCC is still held by Kellogg-Brown-Root.[17]

The various definitions of contracting provide an indicator of the depth in which the respective militaries have considered contractor support. Definitions also confirm that the United States, United Kingdom, and Canada have each established a contract for a variety of support services in support of military operations. The environmental scan provides another indicator of the attention given to contractor support.

ENVIRONMENTAL SCAN AND LITERATURE REVIEW

The academic research with regards to task order contractors has had some noteworthy research published within the last fifteen years. The accompanying military doctrine within the Canadian military has been updated. The United States military and the United Kingdom military have updated and published significant doctrine concerning military contractors.

Civilian academic authors have published relevant studies concerning task order contractors, the focus of this paper. P.W. Singer published *Corporate Warriors: The Rise of the*

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[15] *Ibid.*, p 4-7.
[16] *Ibid.*
[17] Christopher Kinsey, "Transforming War Supply; Considerations and Rationales Behind Contractor Support to UK Overseas Military Operations in the Twenty-First Century," *International Journal* 69, No. 4 (2014): 497, accessed 20 September 2015, http://intl-ijx.sagepub.com/content/69/4/494.full.pdf;.

Privatized Military Industry in 2003; this work focussed on the rise of the private military contractor industry following the end of the Cold War and how it was becoming essential to the conduct of operations. Singer's work encompassed the whole industry and broke it down into various components and categories, including task order contractors like CANCAP.

Deborah Avant published *The Market for Force: The Consequences of Privatizing Security* in 2006. This work is focussed mainly on the security aspect of private military contractors but does have some insight into task order contracts.

Martin Van Creveld wrote a significant work in 1977 on military logistics, namely *Supplying War: Logistics from Wallenstein to Patton*. His work provides an overview of military logistics and its impact on warfare from ancient times up to World War II. There is some insight within his work as to the historical impact of contractors on the conduct of war. His work has influenced other writers as well.

With regards to published civilian theory, Graeme A. Hodge published *Privatization: An International Review of Performance* in 2000. This work, in the context of this paper, has insight into the rationale behind privatizing government services and the supporting theory for such decisions.

United States military doctrine has been updated and expanded upon in recent years. The keystone American doctrine publications are in the Joint Publication series. *Joint Publication (JP) 5-0: Joint Operation Planning* is the overarching doctrine with regards to joint operations and planning for warfighting and all its subordinate components, including logistics. *JP 4-0: Joint Logistics* is the overarching joint logistical doctrine for the United States military and is

subordinate to JP 5-0. *JP 4-10: Operational Contract Support* is the specific doctrine for the function of contracting for the United States military.

United Kingdom military contractor doctrine has been updated in recent years. The key doctrine for the United Kingdom is *Joint Defence Publication (JDP) 5-00: Joint Campaign Planning, Second Edition*; it is the keystone British military doctrine for planning joint military campaigns. *JDP 4-00: Logistics for Joint Operations, Third Edition* is the main doctrine for logistical operations support planning of the British military. Another landmark work was published by Matthew Uttley in 2005, namely *Contractors on Deployed Military Operations: United Kingdom Policy and Doctrine*. This work studies the ways the United Kingdom has used military contractors and derives lessons learned from British experience. Another significant report was the 2010 United Kingdom Ministry of Defence *Tiger Team Final Report: Contractor Support to Operations*. The report was commissioned by the Ministry of Defence to examine contractor support to operations with a view "identifying what is required to create an integrated, sustainable military/contractor force."[18]

Canadian military doctrine has been updated significantly, given experience in Bosnia and Asia. The *Canadian Forces Joint Publication (CFJP) 5.0 – The Operational Planning Process, Change 2* was published in April 2008 and is used as a guide in planning for operations at the strategic and operational levels. *CFJP 4.0 – Support, First Edition* was published in February 2014 and is the keystone doctrinal publication with regards to support doctrine,

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[18]Private Security Monitor, "Contractor Support to Operations – Tiger Team Final Report 16 March 2010": 4-5, accessed 4 April 2014, http://psm.du.edu/media/documents/national_regulations/countries/europe/united_kingdom/united_kingdom_ministry_of_defence_tiger_team_report_2010.pdf;.

including contracting, for expeditionary operations. The Canadian Armed Forces uses *B-GJ-005-502/FP-000 – Risk Management for CF Operations, Change 1*, which was published in November 2007. This manual is used as a guide in identifying and mitigating risk during operations.

In addition to academic works and military doctrine, there are numerous published articles in various magazines and websites which provide insight into military contracting. Of particular interest is an issue of *International Journal*, volume 69, issue 4 which was published in 2014. This particular issue was focussed on military contracting and included several articles on military contracting in Canada, the United States, and other nations.

ANALYSIS

The doctrine of the United States, the United Kingdom, and Canada have been updated to reflect experience and lessons learned from Afghanistan and Iraq. The most current doctrine is available and subject to comparison and review. As such, any analysis and conclusions reached will be current and relevant to current and near future military activities and endeavours. The United Kingdom military has reports on contractor support which will provide valuable insight which Canada appears to be lacking, except for the 2006 Chief of Review Services CANCAP Review. United Kingdom doctrine will be more advanced in contractor support decision making, given the additional study the matter has received.

There is not a large amount of academic work available which has focussed on decision making for contractor support. There appears to be a large focus on the security and war-fighting aspects of contractor support to military operations, not to the logistical aspect of contractor support. Any available works, such as the *International Journal*, which do consider

the logistical aspect of contractor support become that much more important for the insight and value they add to this developing field of study. Given the limited academic review of decision making for contractor support, there does not appear to be any distinct schools of thought developed for this specific area.

With key definitions established and a scan of doctrine and literature completed, it can be seen that some serious consideration has been recently given to contractor support in academic and military doctrinal circles. A historical perspective on contractor support will provide a better understanding of how it evolved to its current iteration today.

CHAPTER 2 – HISTORICAL USE OF CONTRACTORS

As long as there has been warfare, there have been civilian contractors ready to support militaries for a price.[19] Alexander the Great relied to a degree on local officials as contractors to provision his armies which conquered much of the ancient world.[20] The use of contractors by Alexander allowed for the army on the march to secure logistical support and minimize its baggage train. In the Middle Ages, the practice of plundering an area for supplies was counterproductive and turned the civilian population against the invading army. In the late sixteenth century, France and Spain started to change this practice by establishing contracts with local merchants called "sutlers" to provide basic essentials such as rations and ammunition for

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[19] Kinsey and Erbel, "Contracting out Support Services…," 544.

[20] Donald W. Engels, *Alexander the Great and the Logistics of the Macedonian* Army (Berkeley: University of California Press, 1978), 1.

their armies.[21] In doing so, these nations lay a precedent for greater reliance on civilian contractors to support military operations which was to become the norm for the following centuries. The United States military continued with this system during the American Revolution with the establishment of a contracting system for supplies and services in 1781.[22]

The historical trend for the use of civilian contractors to support military operations continued up to World War I. During World War II and the Cold War, most Western military forces were determined to become as self-sufficient as possible for the conduct of military operations. The prevailing wisdom was that in the modern era with total war and the threat of nuclear war, civilian contractors would not be reliable on the battlefield; in this context, it was imperative for conventional military forces to be as self-sufficient as possible.[23]

Following the end of the Cold War, there was an expectation of a "peace dividend," which led to restructuring of many western military forces, normally at the cost of support units.[24] In order to cover any gap in services or capabilities previously provided by military units, many Western militaries, with the United States military being at the forefront, turned to civilian contractors for the provision of previous military-only services and functions.[25] A similar situation had been experienced by the United States military in 1971 when it became a

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[21] Van Creveld, *Supplying War*…, 8.

[22] Mikael Weitzell, "History of Army Contracting," accessed 5 April 2014, http://www.army.mil/article/54337/History_of_Army_Contracting/;.

[23] Kinsey and Erbel, "Contracting out Support Services…," 543.

[24] Mark Cancian, "Contractors: The New Element of Military Force Structure." *United States War College Quarterly – Parameters* 37, No. 4 (Autumn 2008): 1, accessed 27 April 2014, http://strategicstudiesinstitute.army.mil/pubs/parameters/Articles/08autumn/cancian.pdf;.

[25] Major C.D. Croft, "Contractors on the Battlefield: Has the Military Accepted too much Risk?" (Fort Leavenworth: School of Advanced Military Studies, United States Army Command and General Staff College, 2001), 9.

volunteer force. At that time, with a decrease in the number of troops to perform services, the American military resorted to the use of contractors to perform support services.[26]

In the United States, an overarching program for contracting support services previously provided by military units was established in 1985.[27] This program was called the Logistics Civilian Augmentation Program (LOGCAP) and is still in use to this day. It has progressed into a multi-billion dollar contract used by the United States Army globally in support of its military operations.[28]

The Canadian military initiated larger scale contractor support with the Logistics Contractor Augmentation Project (LOGCAS) in the late 1990s. This contract would provide the military with logistical support in the event of widespread computer malfunctions as a result of the Y2K issue.[29] Following LOGCAS, the value of contracting was evident to the Canadian military and a new contract was established under the Contractor Support Program (CSP) which provided for logistical support by contractors to the deployed Canadian military in the Former Yugoslavia from 2000 to 2003.[30] The trend was continued with the establishment of the Canadian Contractor Augmentation Program (CANCAP) in 2002.[31] CANCAP superseded the CSP and is still in use today.

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[26] Weitzell, "History of Army…"
[27] *Ibid.*
[28] *Ibid.*
[29] David Perry, "Contractors in Kandahar, Eh? Canada's 'Real' Commitment to Afghanistan," *Journal of Military and Strategic Studies* 9, No. 4 (Summer 2007): 7, accessed 26 February 2014, http://jmss.org/jmss/index.php/jmss/article/view/98/108;.
[30] *Ibid.*, 8.
[31] Christopher Spearin, "Canada and Contracted War: Afghanistan and Beyond," *International Journal* 69, No. 4 (2014): 526, accessed 20 September 2015, http://intl-ijx.sagepub.com/content/69/4/525.full.pdf;.

Historical review confirms that it is not new for military forces to use civilian contractors to support operations. This trend stretches back to the ancient world and Alexander the Great. The desire for self-sufficiency during the World Wars and the Cold War are relatively new developments in military doctrine and practice. With the end of the Cold War, one could consider that the requirement for the peace dividend is history reasserting itself with the resumption of large scale contractor support to military forces. There is a solid historical foundation establishing the use of contractor support to military forces. To expand this foundation of understanding, the benefits and risks of civilian contractors must be considered.

CHAPTER 3 – BENEFITS AND RISKS OF CIVILIAN CONTRACTORS

Civilian contractors that operate in support of military operations have much to offer a modern military which is faced with lack of resources. Contractors can provide a wide variety of goods and services which augment the military's capacities and capabilities; however, there is a cost to using contractors which must be considered when making the decision to employ them. These associated benefits and risks will be identified and assessed.

BENEFITS

With the end of the Cold War, civilian contractor support has been seen as one of the solutions to decreasing military spending. This consideration notwithstanding, the use of contractors to support military operations does make sense for various reasons which will be explored.

To begin with, civilian contractors are cheaper then military personnel for support operations. The cost of recruiting, training, and retaining military personnel to perform support services which can be done significantly cheaper by civilian contractors can become prohibitive when a government is looking to cut costs. A United States Congressional Budget Office report in 2005 indicated that using organic military resources could cost up to 90 % more when compared with the use of civilian contractors.[32] For example, following the Cold War, the United States Congress directed the American military to find monetary savings without cutting services; the solution was found to be outsourcing services to contractors and privatizing military functions.[33] The United States military throughout the 1980's and 1990's adjusted their support forces so that a focus was put on combat units and weapons systems with a corresponding decrease in support units and increase in civilian contractors.[34]

A key benefit of contractor support comes directly from its resurgence after the Cold War. Contractors provides services that were downsized or removed entirely from the military realm of responsibility during the rush to develop a peace dividend after the Cold War. Thanks to the availability of contractors, western militaries are able to still receive a variety of services and goods that were provided by military support services during the Cold War but are only available from the civilian sector now. Without contractor support, western military forces would have smaller combat forces due to the requirement to have military support forces, or

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[32] Charles M.Smith, *War for Profit: Army Contracting versus Supporting the Troops* (New York: Algora Publishing 2012), 204.
[33] Croft, "Contractors on the …," 9.
[34] Cancian, "Contractors: The New Element…," 1.

these military forces would have inherent support weaknesses that could be exploited by an enemy in battle.

Another consideration in favour of use of civilian contracted support is manning caps. It is not unusual for host nations to impose limits on the numbers of foreign troops being permitted on that nation's sovereign soil during a mission, such as a coalition operation or a United Nations mission. To get maximum effect and flexibility, many militaries choose to deploy combat troops instead of support troops and use civilian contractors to provide support services.[35] Consequently, the deploying task force gets maximum number of combat troops which meets the manning cap imposed by the host nation as civilian contractors are not accounted for under the manning cap.

Another factor in support of civilian contractors is the limited amount of military assets available at any given time and the requirement to maintain operational flexibility. If all the military support assets are dedicated to one mission, then "overstretch" results and there are no assets available to support concurrent operations.[36] By employing civilian contractors to provide military support, decision makers maintain a degree of flexibility through the availability of existing, uncommitted military assets which can be used for concurrent operations. In fact, the consideration "to provide the Canadian Forces with additional operational flexibility through

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[35] Kinsey and Erbel, "Contracting out Support Services…," 551.

[36] Matthew Uttley, *Contractors on Deployed Military Operations: United Kingdom Policy and Doctrine* (Carlisle: Strategic Studies Institute, United States War College, 2005): 1, accessed 12 April 2014, http://www.strategicstudiesinstitute.army.mil/pdffiles/PUB624.pdf;.

enhanced support capability" was a driving factor and program objective of the Canadian CANCAP program.[37]

RISKS

Civilian contractor risks require consideration, including their long term impact on military capability as opposed to short term benefit, so that informed decisions can be made.

When a military chooses to use a civilian contractor to provide support, the military can become reliant over time on the contractor for the provision of that support.[38] This decision can have short term benefits; however, becoming reliant on a civilian contractor to provide support, components of which may be essential to the successful conduct of combat operations, carries an inherent risk. Civilian contractors cannot be compelled to operate under hazardous conditions or perform military duties.[39] For example, consider an armoured formation engaged in battle with several damaged tanks requiring recovery and return to base for repairs and consequent return to the battle. If the conditions are hostile, a civilian contractor cannot be compelled to proceed onto the battlefield to recover the tanks. Consequently, the combat power of the armoured formation is reduced for a significant period of time pending recovery and repair of the damaged tanks. There would be a requirement for either military personnel to perform the recovery or a large force protection element in place to mitigate civilian contractor concerns. Either way, additional military assets would be required to perform the support service. A military can end up

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[37] Department of National Defence, Chief of Review Services, *Evaluation of the Canadian Forces Contractor Augmentation Program (CANCAP) – June 2006* (Ottawa: DND Canada, 2006), iii.

[38] Uttley, *Contractors on Deployed Military…*, 22.

[39] P.W. Singer, *Corporate Warriors – The Rise of the Privatized Military Industry* (Ithaca: Cornell University Press, 2003), 163.

becoming so reliant on a civilian contractor that it becomes a critical dependency.[40] When a contractor is the only alternative to providing a service that essential for mission success, then the mission is in jeopardy.

Associated with the risk of over-reliance on civilian contractors is the risk of opportunistic behaviour. When there is chaos on the battlefield and important combat systems are required for combat but still need repair then transport to combat units, the civilian contractor doing repairs and transport has a large degree of influence as well as arguably opportunity to improve its position. A civilian contractor is motivated by profit; a military unit is compelled by the chain of command. With these different motivating factors, a civilian contractor could display opportunistic behaviour which could be to the military's disadvantage.[41] Such a situation could increase costs of a mission, reduce confidence in civilian contracting support, and reduce the probability of mission success.[42]

If a civilian contractor refuses to perform a task for whatever reason, the military's options are limited. Contracts are negotiated before deployment and can be quite restrictive.[43] Legal action is often the only recourse, which doesn't do a commander any good in the middle of an ongoing operation. Furthermore, most military officers are not trained contract specialists. It is not unusual to have an officer trained and tasked specifically with contract management. This asset does provide the military commander with specialist advice but given restrictions of work

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[40] Uttley, *Contractors on Deployed Military…*, 42.
[41] Frank Camm and Victoria A. Greenfield, *How Should the Army Use Contractors on the Battlefield? Assessing Comparative Risk in Sourcing Decisions* (Santa Monica: RAND Corporation, 2005), 28.
[42] *Ibid.*
[43] *Ibid.*, 26.

based on negotiated contract and extended timelines for execution of orders through a contract officer, the commander's flexibility remains limited.[44]

The legal status of civilian contractors can be considered ambiguous under international law. For civilian contractors on the battlefield:

> International law calls for warring parties to treat civilian personnel accompanying an armed force as prisoners of war and not as unlawful combatants or criminals as long as the personnel do not present themselves in specific, stated ways as an organized military force and carry credentials that clearly identify their role and status on the battlefield.[45]

For many civilian contractors on the battlefield, especially the asymmetric battlefield of the twenty-first century, their roles and tasks can appear to be very similar to soldiers, making them legitimate targets to belligerents. This vulnerability can result in a contractor's unwillingness to perform certain tasks unless there are mitigating factors, such as increased force protection, to offset the risk.

Another risk associated with use of civilian contractors is skill fade. When military support personnel either stop performing, or rarely perform, a military function due to the employment of a civilian contractor, their technical skills suffer as a result. With prolonged use and reliance on civilian contractors, the loss of technical skills is magnified and can get to the point where the military organization has lost or severely degraded its capability to perform a military function.[46] Within the United States military, the shift of support services to the reserves and to civilian contractors has evolved to the point where the technical skills may not

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[44] *Ibid.,* 28.
[45] *Ibid*., 29.
[46] Charles M.Smith, *War for Profit:…,* 212.

always be available for deployment, so the civilian contractors need to be considered a permanent part of the United States military force structure.[47]

The use of civilian contractors to perform support services for military organizations has its associated risks and benefits. Under conditions that suit their use, such as a mature, low threat environment, civilian contractors can be a significant force multiplier to the military. Their use also comes with a variety of risks that require mitigation and a corresponding commitment of military resources. It is certain, however, that civilian contractors need to be considered as part of the military force structure and as such, need to be incorporated into planning, exercises, and doctrine. Their capabilities cannot be ignored in a post-Cold War era where military organizations can no longer expect to have a self-sufficient force structure and where the norm is a limited, all-volunteer force.[48] If a military can account for and mitigate the risks and exploit the benefits with consideration within its decision making process, contractor support becomes a more practical option to be considered. The doctrine related to deciding when to use contractor support needs to be considered next.

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[47] Cancian, "Contractors: The New Element…," 1.
[48] *Ibid.,* 14.

CHAPTER 4 – CIVILIAN THEORY

Academic review of a subject or issue can provide critical insight into the subject's impact and interaction on its environment and lead to conclusions on how to manipulate or mitigate its effects. When considering contractor support to military operations in a support context, the available academic literature is somewhat limited, but what is available provides valuable insight that can be beneficial when considering the use of a contractor as well as designing a decision making model.

PRIVATE MILITARY INDUSTRY

The market for private military firms has increased significantly in value since the end of the Cold War; between 1994 and 2002, the American Department of Defence had more than three thousand contracts with private firms, with a contract value of $ 300 billion.[49] The value of the LOGCAP contract is incredible in itself; LOGCAP 4 was awarded in 2011 with an annual value of $ 15 billion, and lifetime value of $150 billion.[50] CANCAP II has a lifetime value of approximately $ 400 million over five years.[51] Contracted support to military organizations is big business.

The market for the privatized military industry has been categorized by David Singer; he uses the "tip of the spear" analogy to provide a framework in which to define the market under

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[49] Singer, *Corporate Warriors…*, 15.

[50] Defence Industry Daily, "LOGCAP 4: Billions of Dollars Awarded for Army Logistics Support," accessed 12 February 2016, http://www.defenseindustrydaily.com/Billions-of-Dollars-Awarded-Under-LOGCAP-4-to-Supply-US-Troops-in-Afghanistan-05595/;.

[51] Spearin, "Canada and Contracted War …," 538.

analysis. Figure 4-1 provides a schematic of the market. Within this market, there are three types of firms.[52] The military provider firm is at the tip of the spear and is on the frontline. This firm provides command and control of private military forces which is focussed on the implementation of military objectives of the contracting party. The military consultant firm is not on the frontline of the battlespace. They are engaged in an advisory and training capacity to a contracting party, such as a national government. They can provide advice on campaign planning and execution, as well as training to military forces on the conduct of warfare at a tactical or operational level. Military support firms are on the rear edge of the battlespace and are focussed on the provision of non-lethal aid, logistical support and assistance to the contracting party.[53] This last category of firm is where the focus must be centered.

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[52] Singer, *Corporate Warriors…*, 93.
[53] *Ibid.*

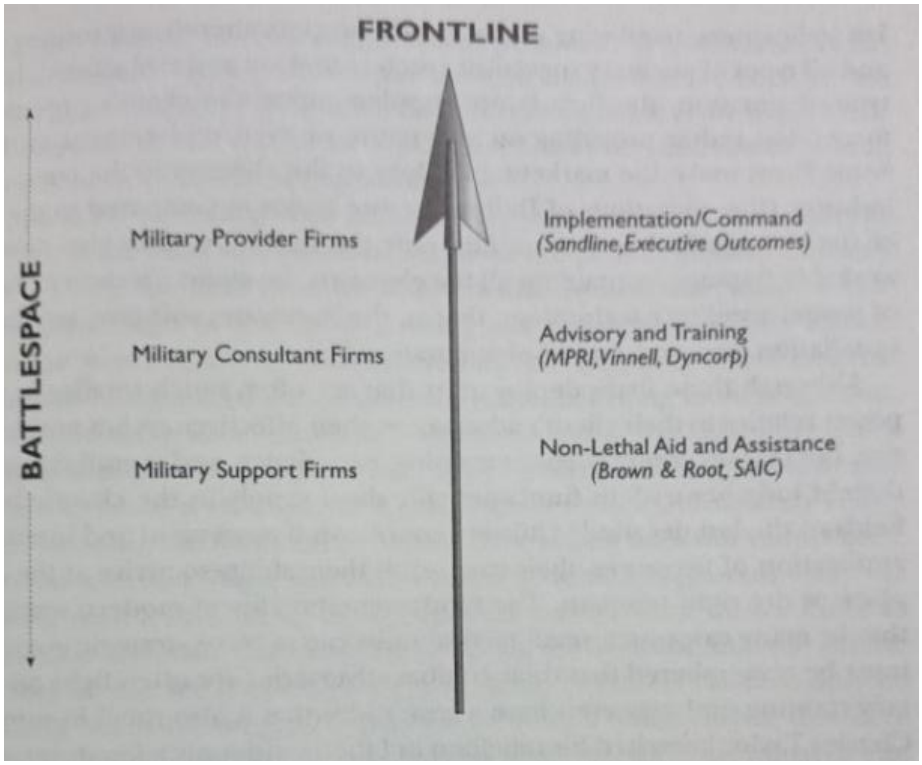

Figure 4.1: The Private Military Market

Source: Singer, *Corporate Warriors – The Rise of the Privatized Military Industry,* 93.

Military support firms provide a wide range of supplementary military services including logistics, intelligence, and technical support services. Other services incorporate engineer services such as set up, operation, and dismantling of temporary camps and facilities.[54] Of the types of firms in the private military market, they are the largest in scope with regards to services provided.[55] Considering that logistics functions including transportation, supply, and food services were main areas where militaries cut their own capabilities after the Cold War, the

[54] Deborah D. Avant, *The Market for Force – The Consequences of Privatizing Security* (Cambridge: Cambridge University Press, 2005), 20.
[55] Singer, *Corporate Warriors*…, 97.

opening was available for military support firms to fill the gaps.[56] Examples of military support firms include Haliburton subsidiary Kellogg-Brown-Root (KBR) as well as ATCO-Frontec Corporation, amongst others in a wide international market.[57]

AGENCY THEORY

From a theoretical perspective, why would a government want to privatize services that it provides? Privatizing involves reducing the role of government or increasing the role of the private sector in an activity or in the management of assets; it is a policy decision initiated by political motivations and objectives.[58] It can include selling assets outright or contracting out public services to private contractors. The objectives of privatization and outsourcing of government services include a requirement for cost savings in order to decrease government expenditures. Another objective is to gain access to technical skills and technology which is not available within the public sector. Lastly, if a government want to focus on what it sees as its core business, components of the public sector may be considered non-core business for the government and become subject to outsourcing.[59] In a Canadian context, the government had decided it needed to focus on core activities in defence, such as the combat roles of the army, navy, and air force. The logistical support elements of the military were not considered core business as such and could then be cut back or contracted out.

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[56] *Ibid.,* 98.
[57] Avant, *The Market for Force…,* 20.
[58] Graeme A. Hodge, *Privatization – An International Review of Performance* (Boulder: Westview Press, 2000), 14.
[59] *Ibid.,* 25.

The theoretical basis for a government to privatize public services is based on a school of thought called agency theory. Under this theory, the company is viewed as a nexus of contracts among factors of production where the factors are management for coordination of activities and risk bearers. Risk bearers provide production assets at the start of the period for a payoff at the end of the period.[60] The owners of a company are not the managers of the company; ownership is separated from control of the company. In another perspective, the principal, namely the owners, enter into a contract with the agents, that is the managers, to deliver services for an agreed reward.[61] This theory was put forth in 1976 by Jensen and Meckling. The theory views agents and principals as seeking to maximize utility and assumes that the principals and agents have limited rationality and will act opportunistically in their own interest.[62] Monitoring of the performance of the agent is required by the principal for control purposes. The principal can then leverage the agent's expertise, technology, and capabilities without having to invest in developing and maintaining the capability internally and incurring the related costs and expenses.[63]

Under this theory, the government, by contracting with a private firm to provide services for an agreed reward, removes the task of actually producing the service from its own resources and maintains a degree of control through monitoring the performance of the private firm in the

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[60] Eugene F. Fama, "Agency Problems and the Theory of the Firm," *Journal of Political Economy 88, No. 2* (April 1980): 289-290, http://www.jstor.org/stable/1837292;.

[61] Hodge, *Privatization – An International Review*…, 38.

[62] Kristina T. Lambright, "Agency Theory and Beyond: Contracted Providers' Motivations to Properly Use Service Monitoring Tools," *Journal of Public Administration Research and Theory 19, No.2* (April 2000): 209, accessed 17 April 2016, http://jpart.oxfordjournals.org/.

[63] David Van Slyke, "Agents or Stewards: Using Theory to Understand the Government-Nonprofit Social Service Contracting Relationship," *Journal of Public Administration Theory and Research 17, No. 2* (April 2007): 162, accessed 16 April 2016, http://jpart.oxfordjournals.org;.

delivery of the service. It permits the government to focus more on its core activities, leverages the skills and expertise of the private sector, and provides delivery of core public services.

There are some concerns raised by agency theory. The theory recognizes that agents can be opportunistic and as such, can take advantage of government organizations which are not familiar or current with contracting practices as well as the delivery of various types of services. Agency theory refers to this factor as asymmetric information held by the agent which can be used to their advantage.[64] In such a situation, the agent may disproportionately benefit from a contract slanted in its favour. It is therefore incumbent on government to ensure that they are properly informed as to contracting practices and obtain a contract that benefits all parties involved. The government wants to have the contract established so that the interests of the agent, in this case CANCAP, align with those of the principal, namely the government.[65]

Agency theory itself does not allow for complex social and constitutional relationships which are not unusual within the government sphere of activities. Government operates in an environment in which there are many social groups, interest groups and dynamics which influence decisions, legislation, and regulation on a short and long term basis. Furthermore, the basis of government authority to act comes from the constitution or "law of the land" in different countries. The relationships that evolve as a result of constitutional authority are complex and impact on different levels of government. The contracting of government services to private

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[64] *Ibid.*

[65] Gloria Cuevas-Rodriguez, Luis Gomez-Mejia and Robert M. Wiseman, "Has Agency Theory Run its Course?: Making the Theory More Flexible to Inform the Management of Reward Systems," Corporate Governance: An International review 20, No. 6 (November 2012): 527, accessed 17 April 2016, http://dx.doi.org/10.1111/corg.12004;.

firms takes place in such an environment and agency theory does not account for this complex environment. This factor does not mean that agency theory is not applicable. What needs to be kept in mind is that when the theory is applied in reality, it cannot be dogmatically applied; it must be taken into account in a framework which considers other factors. In a military context for the contracting of support to deployed military forces, the Operational Planning Process provides the framework in which agency theory can be applied.

A criticism of agency theory is that the model is one-sided; it negatively characterizes an individual agent's behaviour as self-seeking and focussed on obtaining power and material gains. It ignores pride and loyalty of agents and workers, as well as their identification with the organization's goals. Agency theory also assumes no opportunistic behaviour by the principal.[66] As such, by strictly following agency theory and its tenets when establishing and implementing a contract, there is a possibility that some systemic flaws would then be set in place that would motivate the agent negatively in response to the negative characterizations put forth by agency theory and established in a contract. In effect, by following agency theory, a self-fulfilling prophecy of negative agent behaviour may be set in motion. This concern can be alleviated by ensuring that any contract established ensures proper feedback and communications with the agent, as well as ensuring that the agent has a mechanism to appeal any principal decisions that may be unjust. By providing a degree of control to the agent, a measure of trust can be set in place that provides both parties with recourse if necessary.

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[66] David Van Slyke, "Agents or Stewards:…," 163.

ANALYSIS

Various inferences can be drawn from agency theory with regards to contractor support to deployed Canadian military forces. Agency theory provides a theoretical basis for using military support firms to meet government objectives of providing services using private industry. The government's objectives for CANCAP included the requirement to maintain support-to-warfighting skills, free up support military personnel for use where most needed, and enhance operational flexibility through improved support capability. These objectives align with the theoretical objectives of privatization in order to focus on core business and cost savings. The Canadian military, by using CANCAP, can employ military support personnel in higher risk theatres and maintain their support warfighting skills without compromising support in lower risk theatres. In effect, the Canadian military businesses of warfighting and support to warfighting are complemented and supported by the use of CANCAP.

Singer's categorization of the private military industry indicates that the desired category of firm is the military support firm which can provide the necessary range of support services to deployed Canadian military forces. They can operate in the battlespace rear secure areas as delineated by Singer's tip of the spear analogy. The CANCAP contractor, SNC-LAVALIN PAE, is a clearly identifiable military support firm that has proven itself capable of providing a wide range of support services to deployed Canadian military forces in different theatres with varying levels of risk.

There is monitoring done of the CANCAP contract when it is in use. At the strategic level in National Defence Headquarters, the Associate Deputy Minister (Materiel) has a directorate, Director General Procurement Services, which is responsible for assisting in

developing and monitoring the CANCAP contract. Specifically, the Directorate of Major Procurement which works for the Director General Procurement Services, supports the CANCAP contract.[67] At the operational level, Canadian Joint Operations Command (CJOC) J4 Contracts serves as the main agent for monitoring contract performance as well as planning the use of CANCAP during the OPP.[68] More detail is provided on CJOC J4 Contracts in a later chapter. At the tactical level in theatre, there is a Task Force Contracts Officer as well as a Contract Management Cell which provides on the ground monitoring and management of the CANCAP contract.[69] Furthermore, the Canadian military in 2014 updated and improved its contract management training for military officers tasked with this responsibility. With these various levels of monitoring and management of the CANCAP contract and its performance, there is a robust framework in place to ensure that the contract is carried out in an effective manner, there is no contractor opportunistic behaviour warned about in agency theory, and that best contracting practices are followed.

Underlying the theory of the use of contractor support is the expectation that it will be used under the correct conditions. Review of Figure 4-1 shows military support firms on the rear area of the battlespace, implying they are not used in active combat. Agency theory has contractor support being established for political motivations and objectives. There would be an expectation by the Canadian public that the contractor support option would not result in civilian casualties; such a situation would be politically difficult for the government to deal with, given

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[67] Lieutenant Commander T.L. Joudrey, *Canadian Joint Operations Command Deployed Contracting Handbook* (Ottawa: n.p., 2014), 6.
[68] *Ibid.,* 13.
[69] *Ibid.,*69.

the societal aversion to casualties. These factors must be accounted for in the decision making process for employment of contractor support to military operations.

Given these considerations, it can be seen that CANCAP has a sound basis in agency theory for its usage. It meets government objectives of privatization. It supports the military focussing on its core businesses of warfighting and support to warfighting. It employs a military support firm from the privatized military industry to provide a wide range of support services to deployed military forces. There is monitoring done of the contract at the tactical, operational and strategic levels to ensure that there is no opportunistic agent behaviour and that best contracting practices are followed. The decision making process will need to account for theoretical expectations that contractor support will be employed in a permissive environment with minimal casualties. A properly designed decision making model must account for these factors. From a theoretical perspective, contractor support is a good fit for the Canadian military when control and monitoring measures are integrated into the management framework and the decision making process accounts for the factors raised by civilian theory.

To provide balance, an example needs to be considered what may happen when there is no scrutiny or monitoring of contractor support. The LOGCAP IV contractor, KBR, has had several issues related to corruption and poor performance during the occupation of Iraq by American and coalition forces. In 2014, KBR faced a lawsuit related to corruption as well as overcharging the military in Iraq for services ranging from food services, construction and

transportation, as well as unsafe work practices.[70] Without monitoring, as seen with KBR, problems can develop. Problems can also develop when government does not properly monitor contractor behaviour.

If government is going to contract for services, agency theory indicates that control measures are required to counteract possible opportunistic behaviour, such as was seen with KBR. If such steps are not taken, there is great potential for loss of control and resources. For example, in the United States, studies done by the General Accounting Office in 2003 and 2004 indicated that the Department of Defence did not know how many contractors it employs, how much was being spent on contracts, and that the computer contract management system was not being used or updated.[71] With contract values in the billions of dollars, the necessity for firm compliance and monitoring mechanisms to verify contractor performance is evident. Otherwise, opportunistic behaviour as seen with KBR will be the result.

These examples of KBR and the United States Department of Defence confirm the need for a robust monitoring and compliance regime to ensure adherence to contractual terms and expected performance. To move beyond civilian theory to military doctrine, different doctrines on the decision making process will be reviewed and compared.

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[70] Project on Government Oversight, "KBR Accused of Kickbacks, Gouging, Unsafe Practices in Iraq," accessed 4 April 2016, http://www.pogo.org/blog/2014/01/20140128-kbr-accused-of-kickbacks-gouging-unsafe-practices-in-iraq.html;.

[71] Lieutenant Colonel Larry Locke, "Is Military Outsourcing Out of Control ?" (Carlisle Barracks, Carlisle Pennsylvania: United States Army War College Strategy Research Project Paper, 2006), 6-7.

CHAPTER 5 – DOCTRINE

A military uses doctrine to guide its actions and provide a foundation for all its operations, processes and procedures from the tactical to the strategic level. There are many similarities between the doctrinal processes and procedures to be found between many Western militaries. These similarities are based on historical cooperation as well as existing alliances such as the North Atlantic Treaty Organization (NATO). Doctrine is essentially military theory, in contrast to civilian theory which was considered in the previous chapter.

To assess a country's doctrine specific to the decision of deploying a task order contractor such as CANCAP, that country's planning process for operations needs to be considered. The associated risk management doctrine must also be assessed as well as the role of contractors, if any, in the planning process. Risk management will influence decisions on operational concept and scheme of manoeuvre, operational support, implementation of control and mitigation measures. Strategic considerations need to be incorporated into the planning process. These considerations will be used to assess the related doctrine of the United States military, the United Kingdom military, and the Canadian military.

UNITED STATES DOCTRINE

In the United States military, the key doctrinal planning process is called the Joint Operation Planning Process (JOPP) which "is an orderly, analytical process, which consists of a set of logical steps to examine a mission; develop, analyze, and compare alternative COAs

{course of action}; select the best COA; and produce a plan or order."[72] It is a complex process which puts the military commander's intent and plan into actual orders for execution at the operational and strategic levels. The interaction during this process involves operations staff, support staff, outside agencies as required, and specialist staff such as engineers and medical staff. There are seven steps to the process:

a. Step 1 – Planning Initiation;
b. Step 2 – Mission Analysis;
c. Step 3 – Course of Action (COA) Development;
d. Step 4 – COA Analysis and War Gaming;
e. Step 5 – COA Comparison;
f. Step 6 – COA Approval;
g. Step 7 – Plan or Order Development.[73]

It is during the specific step of developing courses of action that specialist staff, especially support staff, complete a staff estimate to identify the alternatives available at the time for support to tentative course of action, including civilian contractors, would be considered.[74]

SUPPORT STAFF ACTIVITIES

The United States *Joint Publication 4-0 – Joint Logistics* doctrine provides further insight and detail into the staff estimate and planning processes used by logistics staff during the JOPP. The process is referred to as the logistics planning process includes a theatre logistics analysis,

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[72] United States, Department of Defence, *Joint Publication 5-0 Joint Operation Planning* (Washington, D.C.: GPO, 2011), IV-1.
[73] *Ibid,* IV-2.
[74] *Ibid,* C-2.

theatre logistics overview, the logistics estimate, a concept of logistics support development, and plan refinement. The theatre logistics analysis determines infrastructure, logistics assets and resources, and environmental factors in the operational environment that will optimize or adversely impact means for supporting and sustaining operations.[75] The theatre logistics overview is used to understand and frame the mission and use the theatre logistic analysis to develop an overarching theatre logistics support approach.[76] This step is essential to identify and mitigate capability gaps as well as risks.[77] The logistics estimate:

> contains the logistics staff's comparison of requirements and capabilities, conclusions, and recommendations about the feasibility of supporting a specified COA. This estimate includes how the core logistics functions (including operational contract support) affect various COA(s).[78]

The logistics estimate is then used as the basis for a concept of logistics support once a course of action has been selected by the commander. The concept of logistics support addresses the theatre level sustainment of forces and establishes priorities of support throughout the operation.[79] The theatre logistics overview and the logistics estimate would be the steps in the process where capability gaps would be identified and operational contract support (OCS) would be considered as an option in order to support the mission.

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[75] United States, Department of Defence, *Joint Publication 4-0 Joint Logistics* (Washington, D.C.: GPO, 2013), IV-13.
[76] *Ibid*., IV-14.
[77] *Ibid.*
[78] *Ibid.*
[79] *Ibid.*

The United States doctrinal publication *Joint Publication 4-10 – Operational Contract Support* identifies that it is necessary for support planners and external contract planners to be integrated early in the JOPP in order to provide alternatives for support, including LOGCAP.[80]

LOGCAP is designed to provide general logistics and minor construction support to deployed Army, joint, and multinational forces.[81] It can provide support for up to 77 000 personnel within 30 days of a task order being signed off. It is designed for initial force deployment and employment support and is not intended for the long term An overview of LOGCAP services can be seen in Table 5-1.

Within the United States military, there has been significant progress in ensuring that OCS is included at the earliest opportunity when planning for a campaign or mission is undertaken. Recent direction from the Department of the Army confirms that OCS will be routinely considered as a means of support in the Contractor Support Integration Plan and

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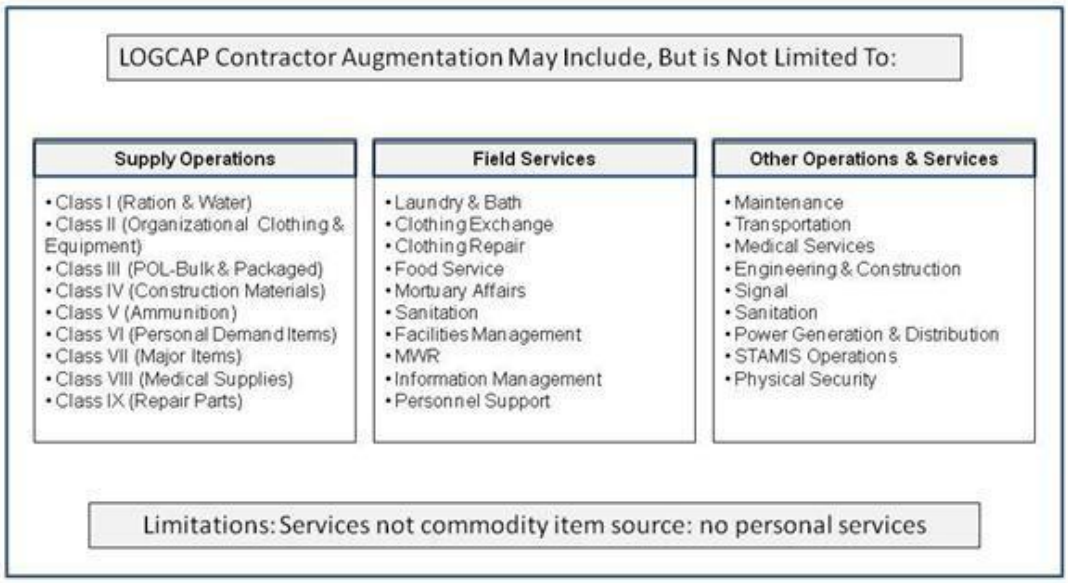
[80] United States, Department of Defence, *Joint Publication 4-10 Operational Contract Support* (Washington, D.C.: GPO, 2008), III-16.

[81] *Ibid,* B-4.

Table 5.1: LOGCAP Services



Source: United States Department of Defence, *Army Tactics, Techniques, and Procedures No. 4-10*, 1-1.

not as the exception. It will be considered in routine, contingency and crisis planning.[82] With regards to LOGCAP, if it is identified as an alternative, doctrine and regulations now have LOGCAP planners being incorporated directly into the Contractor Support Integration Plan and the Contractor Management Plan.[83] This change from unwanted last ditch option to using contractor support to support operations routinely is a clear proclamation of the value and need placed upon contractor support by the United States military.

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[82] United States, Department of the Army, *Army Regulation 715-9 – Operational Contract Support Planning and Management* (Washington, D.C: Department of the Army, 2011), 5-6.

[83] United States, Department of the Army, *Army Regulation 700-137 Logistics Civil Augmentation Program* (Washington, D.C.: Department of the Army, 2012), 3.

RISK MANAGEMENT

Risk management is an essential component of the doctrine associated with the JOPP, including when determining whether an external support contractor such as LOGCAP should be deployed. Risk management has five steps in American doctrine as shown in Table 5-2:

Table 5.2: Risk Management Steps, United States Doctrine

Risk management steps	*Operations process activities*	
Step 1–Identify the hazards	Planning	Assessing
Step 2–Assess the hazards	Planning	
Step 3–Develop controls and make risk decisions	Planning and preparing	
Step 4–Implement controls	Planning, preparing, and executing	
Step 5–Supervise and evaluate	Planning and executing	

Source: United States Department of Defence, *Army Techniques Publication 5-19, Change 1*, v.

The process can be quite detailed and won't be assessed in depth at this point. Suffice to say, it is an ongoing process that is done throughout the JOPP by all staff elements which results in recommended controls to mitigate risk.[84] The higher the risk and its probability of occurring leads to greater application of control measures to mitigate the risk. During the JOPP mission analysis and COA development:

> the staff conducts an in-depth analysis to determine if the current task organization and resources are sufficient to support mission accomplishment within the risk tolerance. Staffs consider whether insufficient manpower, skills, supplies, or positioning of units pose risks to the mission. Staffs strive to identify and overcome these shortcomings and lower the residual risk through controls.[85]

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[84] United States, Department of the Army, *Army Techniques Publication [ATP] 5-19, Change 1* (Washington. D.C.: Department of the Army, 2014), vi.

[85] *Ibid.,* 4-7.

During this risk analysis, the support staff involved on the JOPP would identify resource gaps and identify control measures or mitigating steps to minimize the risk. It is at this point that the gaps and risks identified, such as shortage of trained support personnel available to support the mission for example, would lead to the support staff indicating that an external support contractor such as LOGCAP, could be employed to cover the shortfall in resources. Given that United States doctrine and force structure is such that OCS is a required logistical function to be assessed during JOPP, the use of external support contractors to support a mission will have to be assessed. It will be considered as a matter of routine based on United States doctrine.

The United States military uses its risk assessment analysis for dealing with many components of decision making, including the decision to use contractor support.[86] This analysis cannot be transformed into a comprehensive model that will identify all effects due to the decisions made from the analysis.[87] Consequently, it can be discerned even with the requirement to consider OCS routinely as part of the JOPP, the United States military does not have a "systematic way … to approach the general challenge to deciding when, where, and how to use contractors on the battlefield."[88] Without such an approach, there will continue to be a lack of consistency in contractor support decisions within the United States military. In addition, the analysis provided for within JOPP and risk management appears focussed at the tactical and operational level. Strategic concerns, such as long term impacts on manning and maintaining military support occupations for example, do not enter into the analysis. This oversight with

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[86] Camm and Greenfield, *How Should the Army…,* 10.
[87] *Ibid.*
[88] *Ibid.,* 39.

regards to strategic considerations can result in overlooking long term solutions to recurring problems at the operational level; the end result is solving the same problem, again and again.

ANALYSIS

United States doctrine shows that no model will actually be used with regards to the decision to deploy an external support contractor. The decision will be based on the analysis conducted throughout the JOPP process. A significant factor is that the United States military will deploy with an external support contractor regardless of the circumstances. The United States military, in cutting back its military support capability by moving functions to the reserves or privatizing the function to civilian contractors, does not have the organic support capability it had during the Cold War; for any sizeable deployment of significant duration, it has to deploy with civilian contractor support. The only decision to really be made is how much contractor support will be deployed and for how long.

The magnitude of United States military contracting does cry out for a degree of rigour to be applied to the decision making process. As the RAND Corporation study concluded, there is no decision making model in place beyond the analysis performed in JOPP. The past criminal behaviour of KBR as well as the lack of scrutiny by the Department of Defence has not served the American military well. With billions of dollars as well as lives and materiel being impacted by American contractor support, it stands to reason that a degree of discipline and rigour must be applied to the decision of deploying contractor support. A scientific decision making model would improve this specific decision making process.

UNITED KINGDOM DOCTRINE

The United Kingdom military uses a planning process very similar to the JOPP. In the United Kingdom, the process is call the operational estimate, which is:

> a logical process of reasoning by which a commander, faced with an ill-structured problem, arrives at a decision for a Course of Action (CoA) to be taken in order to achieve his mission.[89]

The operational estimate is a rational planning process that is used at the operational level to develop a commander's campaign plan and focusses on the "essentials of a military problem" as well as "the art of the possible."[90] Figure 5-1 provides an overview of the process:

[89] United Kingdom, Ministry of Defence, *Joint Doctrine Publication 5-00 Campaign Planning Second Edition* (Shrivenham: Ministry of Defence, 2008), 2-20.

[90] *Ibid.,* 2-21.

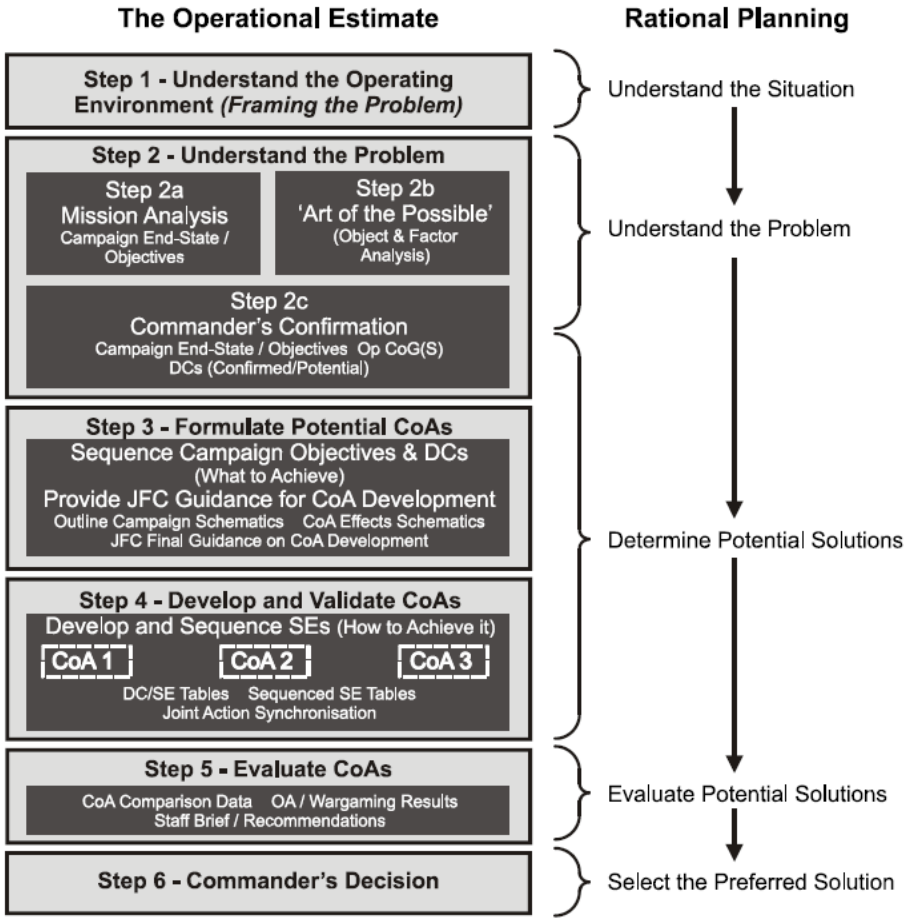

Figure 5.1: The Operational Estimate

Source: United Kingdom, Ministry of Defence, *Joint Defence Publication 5-00*, 2-22.

Step one, framing the problem, allows the commander and his staff to analyze the operating environment, especially the background of the situation, whether it be political, economic, military, as well the situation's underlying causes.[91] Step two is normally broken into two parts. The first part, understanding the problem, allows the commander and staff to identify and understand the campaign end-state, the intent for the mission, as well as any limitations or

[91] *Ibid.,* 2-28.

constraints they may be faced with. The second part is an evaluation of objects and factors. Logistics is a critical planning factor which is assessed for strengths and weaknesses in step two.[92] The commander then reviews all analysis to this point to identify key deductions such as centre of gravity, campaign objectives and end-states, and other key deductions.[93] In step three, in developing potential courses of action, the commander and staff work on campaign ideas to show how the end-state and objectives can be achieved which can be described as distinct concepts of operations.[94] In step four, the staff take the commander's outline to then develop and validate specific courses of action, that show it can be done, which achieve the end-state with resources available.[95] In step five, the courses of action are assessed for likelihood of success and compared for advantages, disadvantages, and risks. They are then presented to the commander in step six for his decision which is then translated into a concept of operations and subsequent production and distribution of orders, directives, and plans.[96]

SUPPORT STAFF ACTIVITIES

As part of the operational estimate, the support staff will be conducting their own subordinate planning. The use of Contractor Support to Operations (CSO) must be considered early in the process so any contractor requirements can be identified and CSO given due consideration.[97]

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[92] *Ibid.,* 2-29
[93] *Ibid.*
[94] *Ibid*., 2-31.
[95] *Ibid.,* 2-32.
[96] *Ibid.,* 2-36.
[97] United Kingdom, Ministry of Defence, *Joint Doctrine Publication 4-00 Logistics…,* 4-5.

The support staff will normally conduct the logistics estimate early in the planning process in steps one and two, as well as use it for a basis for course of action development in other steps. The logistics estimate is continuously updated throughout the planning process as more information is available and decisions are made.[98] The logistics estimate is used to produce an operation-specific Joint Supply Chain Plan. It is in the joint supply chain plan that capability gaps are confirmed and solutions identified to mitigate the gap.[99]

The CSO will initially be identified in step two of the estimate process during the evaluation and analysis of logistics factors. Given the situation and any resource shortfalls that are identified in the process, CSO may be identified by support staff as a component of any course of action that is developed and presented to the commander. It is within the capability gaps that CSO would be put forward as a firm solution for that specific plan.

CSO within the UK military has its own equivalent to the American LOGCAP contract. The United Kingdom's Permanent Joint Headquarters (PJHQ) has the OSCC contract which provides a wide range of service including accommodation and facilities management, construction, communications, and other services.[100] The PJHQ owns the OSCC contract and as such, has a permanent OSCC plans unit that "continually identifies and manages actual or potential future requirements for all contractor support, and a OSCC Operations Team responsible for specific planning and implementation of commercial support to particular

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[98] *Ibid.,* 5-9.
[99] *Ibid.,* 5-10.
[100] *Ibid.,* Lexicon – 9.

operations."[101] Furthermore, PJHQ has detailed decision-making algorithms and models for use by commanders when considering contractor support and impacts of contractor withdrawal.[102] Lastly, PJHQ has embedded OSCC contractor staff to advise and provide support for planning as well as ongoing missions. The current contractor, Kellogg-Brown-Root (KBR) and the OSCC operations team are involved in every step of the Operational estimate and the logistics estimate. Consequently, OSCC support can be considered and exploited at the earliest possible opportunity "to prepare detailed schedules of contractor support requirements, to rapidly mobilize a coherent package of commercial capability, and to de-conflict similar military and OSCC capabilities throughout an operation."[103]

RISK MANAGEMENT

In the United Kingdom military doctrine, risk analysis and management supports the taking of calculated risks, rather than gambles, while avoiding unduly cautious decision-making, and missed opportunities.[104] Risk analysis identifies activities and factors that allow significant risk, their probability and potential impact. Risk management puts in place controls and activities to mitigate any consequences of risk, minimize their occurring, mange the risk and to be prepared to exploit any opportunities.[105]

With regards to CSO, United Kingdom experience has been that early consideration of CSO risk in the operational estimate is necessary to facilitate risk mitigation and control

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[101] Uttley, *Contractors on Deployed Military…*, 42.
[102] *Ibid.,* 43.
[103] *Ibid.,* 44.
[104] United Kingdom, Ministry of Defence, *Joint Doctrine Publication 5-00 Campaign Planning…*, 2H-3.
[105] *Ibid.,* 2h-4.

measures.[106] Contingency measures could include maintaining a military capability or long-term partnership arrangements. Given the existence and use of the OSCC contract along with the PJHQ OSCC operations team, embedded KBR personnel, as well as decision making algorithms used by PJHQ staff as part of the operational estimate, it appears that the United Kingdom has many resources available for decision making for civilian contractor deployment in the support of military operations. A Ministry of Defence Tiger Team report in 2010 included as part of its recommendations that a CSO focussed Operational Risk Decision Support Tool be developed. It would map all contracts in theatre and would improve the conduct of contingency analysis and mitigation planning.[107] It appears the tool has not yet been developed within the UK.

ANALYSIS

For the United Kingdom military, the decision making process for deploying contractor support during the operations estimate is comprehensive and formalized. The analysis conducted during the operational estimate is supplemented and supported by a decision making model as well as experienced military staff and embedded contractor personnel. Consequently, any decision to deploy OSCC support for a military operation will result in a plan and contractor support that is broad, complete, and detailed, with contingencies built into the plan. OSCC support will not be deployed into a situation where it is more of a liability then an asset, given the broad range of expertise available to support such decisions. At this point, there is no indication that strategic long term considerations, such as manpower of support trades, are taken into account when deciding upon contractor support during the operations estimate.

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[106] United Kingdom, Ministry of Defence, *Joint Doctrine Publication 4-00 Logistics…,* 4-7.
[107] Private Security Monitor, "Contractor Support to Operations – Tiger Team Final Report …," 20.

CANADIAN DOCTRINE

Similar to the United States and United Kingdom doctrine, the most recent Canadian military joint doctrine publication confirms the relevance importance of contractor support:

> Contracted support is an economy-of-force measure that enables the longer-term sustainment of operations. As a force multiplier, contracting can be an effective and efficient means of expanding capacity, mitigating over-tasked CAF resources, and filling support capability gaps.[108]

In Canadian military support doctrine, contractors are now a part of the considered factors when planning support to an operation. They are considered as part of the theatre support framework as deployed contractors.[109] A review of Canadian doctrine concerning contractor support decision making will identify how this importance is reflected in doctrine and how a model could assist in decisions. The managing organization, CANCAP, and Afghanistan experience will then be considered to show how the doctrine has been implemented.

Canadian military doctrine for operational planning mirrors closely that of the United States and the United Kingdom. The Canadian OPP is designed to optimize "logical, analytical steps of decision making in conditions of uncertainty and ambiguity."[110] The process can apply to any situation but can be abbreviated if required to a crisis situation. The objectives of the OPP include maintaining strategic and political control during the process, translating political goals into operational objectives, and enabling commanders to guide and synchronize the development

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[108]Department of National Defence, B-GL-005-400/FP001 *Canadian Forces Joint Publication 4-0 Support…*,2-20.

[109] *Ibid.,* 2-3.

[110] Department of National Defence, B-GJ-005-500/FP000 *Canadian Forces Joint Publication 5.0 - The Canadian Forces Operational Planning Process, Change 2*(Ottawa: DND Canada, 2008), 3-1.

of the plan.[111] The final output is an operations plan or an operations order. There are five stages to the OPP including initiation, orientation, course of action development, plan development, and plan review.[112] Figure 5-3 provides a schematic of the OPP in both of its iterations, deliberate planning or rapid response planning.

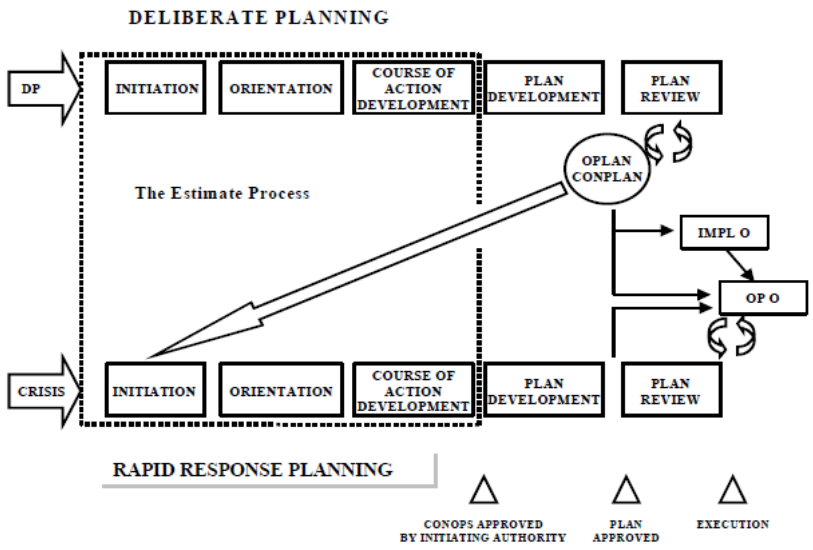

Figure 5.3: Canadian Operational Planning Process

Source: Department of National Defence, B-GJ-005-500/FP000 *Canadian Forces Joint Publication 5.0 - The Canadian Forces Operational Planning Process, Change 2*,4-1.

The first stage, initiation, commences with receipt of direction from higher headquarters. During this stage, planning staff are activated, the commander issues planning guidance, and an initial assessment is conducted and threats identified. The final products of this stage are the commander's initial guidance to staff and issue of a warning order to subordinate formations.[113]

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[111] *Ibid.*
[112] *Ibid.*
[113] *Ibid.*, 4-2.

Stage two, orientation, includes the mission analysis and the issue of the commander's planning guidance as an output. The mission analysis considers required end-states, key strengths and weaknesses of own and opposing forces, required capabilities such as CANCAP, time and space factors, and proposed timelines.[114]

Stage three, course of action development provides a framework for staff analysis incorporating various factors and deductions to determine the feasibility of the various options.[115] During the course of action development, the probable force package and capability requirement and resulting capability gaps will indicate whether contracted support will be required and of what magnitude. Following development of the courses of action, war gaming and comparison would take place to validate the courses of action being considered. A decision brief would then be given to the commander for a selection of course of action.[116]

Stage four, plan development, results in an approved plan or operation order. The commander will seek approval from higher headquarters for his concept of operations. Once approval is received, the issues and shortfalls that have been identified throughout the process to date will need to be mitigated or resolved. At this point, critical support capability gaps and their solutions which had been identified in stage two and three will be addressed, of which a critical solution can be contractor support. The plan and its supporting documentation would be collated and then issued.[117]

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[114] *Ibid*., 4-4.
[115] *Ibid.,* 4-8.
[116] *Ibid*.
[117] *Ibid.,* 4-14.

In stage five, plan review, the plan is continually reviewed to ensure viability. Exercises, war gaming, and progress review of operations are conducted to verify the plan's viability during planning and execution phases.[118]

SUPPORT STAFF ACTIVITIES

During the Canadian OPP, the support staff has their own focus and activities to support the process. In stage one, initiation, the support staff will start gathering baseline information and identifying essential support tasks where possible.[119] Baseline information would be based on the possible area of operations, including civil infrastructure capabilities and capacities, transportation networks, environmental factors, availability of host nation support, and other factors. This process is call logistics preparation of the battlefield.

In stage two, orientation, the support staff participates in the mission analysis. [120] They identify key support considerations, intentions and desired effects. Assumptions, limitations, task analysis and risk identification associated with the theatre support system will be identified and analyzed as well during mission analysis. The staff will work on the support estimate during orientation. Support planning factors are numerous but some key ones have been identified to assist in conducting the support estimate:

a. nature of the operation – the composition of the Joint Task Force and how it will be supported is defined by this factor. A combat mission will have different support then a peacekeeping mission;

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[118] *Ibid.,* 4-15/16.
[119] *Ibid.,* 4-4.
[120] *Ibid.*

b. force structure and composition – the number of personnel and types of equipment and vehicles will drive the support planning with regards to deployment as well as materiel and services to support the force;
c. destination - the intended area of operations with its infrastructure, culture, host nation support, climate and terrain, as well as available multinational partner support will all impact the support planned for a joint task force;
d. demand – demand for materiel and corresponding forecast consumption are impacted by the type of operation and force composition. A large combat force will need less fuel and ammo as opposed to a peacekeeping force. This demand will then impact on required strategic lift and sustainment, as well as theatre holdings and stock of materiel, with associated infrastructure;
e. distance and accessibility – the distance to the theatre as well as its accessibility by air, land and sea will define the design of the lines of communications, transit time, and their impact on operational capability; and
f. duration – the duration of the operation will impact on amount of materiel to be maintained in theatre as well as sustainment and resupply timelines. A short operation will require a smaller support structure, a larger operation will require the converse.[121]

Analysis of the above factors will normally identify initial support gaps and the need to identify alternatives. It is during the support estimate and mission analysis that the alternative of

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[121] *Ibid.,* 4-10/11.

contractor support will be identified. This analysis forms a key component of the support estimate which will then provide the basis for developing support courses of action in the next step.

In stage three, courses of action are developed and decided upon. A support course of action may be developed to support each separate course of action; however, many times a single flexible approach may be adapted by the staff to maximize resources and support different operational courses of action.[122] For each operational course of action, the support staff must consider the commander's concept of operations, the risks with regards to support, the costs, and the potential support capability gaps.[123] At this point, the option of contractor support will be firmly considered and if circumstances are supportive, contractor support will be put forward as part of the support course of action. The decision to deploy contractor support is based on subjective analysis conducted during the OPP; it is not based on any specific decision making model. The courses of action and corresponding support are then war gamed to refine them. The commander then decides upon the proposed course of action and corresponding support course of action during the decision brief.

In stage four, plan development, the support staff develops the support paragraph and annex of the operation based on the concept of support. Any outstanding support issues must now be resolved during this step. When the support plan is completed, it is issued as part of the operation order.

In stage five, the plan is continually reviewed and updated as required.

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[122] *Ibid*., 4-12.
[123] *Ibid.*

RISK MANAGEMENT

The risk management doctrine followed by the Canadian military has commanders integrating risk management as early as possible into the OPP where risks can be readily assessed and managed through risk controls and mitigation plans. Risk management continues through the execution phase to deal with unforeseen risks and to assess risk control measures.[124]

In phase one, threats are identified based on the mission and perceived vulnerabilities of friendly forces as well as the operating environment. The causes of the threats are also identified.[125]

In phase two, threats are assessed for probability of occurrence and severity. The completed risk assessment incorporates probability and severity and can be portrayed as a matrix.[126] This matrix will show prioritization of risks, with the highest priority threat being the most serious one to threaten the mission.

In phase three, the assessed threats have controls developed to eliminate or reduce the risk in accordance with the commander's guidance.[127] Controls can include engineering controls such as use of fire control mechanisms or new technology in armoured fighting controls, as well as operational controls such as boundaries on the battlefield and phase lines. After controls are

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[124] Department of National Defence, B-GJ-005-502/FP-*000 Risk Management for Canadian Forces Operations, Change 1* (Ottawa: DND Canada, 2007), 2-2.
[125] *Ibid.,* 3-1.
[126] *Ibid*., 3-2.
[127] *Ibid*.

identified, residual risk needs to be assessed and then the commander must make the decision on how much risk he will accept in order to achieve his mission.[128]

In phase four, the associated risk control measures are put in place, through allocation of forces, release of additional assets, and the adjustment and issue of orders. The commander must ensure the resources are available and the risk controls are sustainable.[129]

In phase five, the risk controls are monitored for effectiveness and review. Based on feedback and assessment, controls will be adjusted or new controls put in place as required.[130]

With regards to risk and contractor support to an operation, planners and commanders must consider environmental issues as well disruptions to lines of communications and maintenance of materiel and stocks in theatre.[131] The risk associated with contractors deploying into a combat theatre must be considered, as well as the risk of contractor non-performance or withdrawal in the event of active hostilities. For example, in a hostile environment, contractor personnel could be required to remain on secure facilities "behind the wire." Additional force protection measures such as requirement for military escorts could mitigate the risk. In the event of a contractor withdrawal from a theatre due to enemy operations, contingency plans could include getting short term support from allies, or using military resources to fill the gap left by the contractor. The use of contracted support has its benefits under the right circumstances, but

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[128] *Ibid*., 3-4.
[129] *Ibid.*
[130] *Ibid*., 3-5.
[131] Department of National Defence, B-GL-005-400/FP001 *Canadian Forces Joint Publication 4-0 Support…*,4-12.

risk is a part of using contractor support. Risk control measures and contingency plans are an essential component of any support plan that depends on contractor support.

CJOC and OPP

There is a specific directorate within the Canadian Joint Operations Command (CJOC) that is responsible for the planning of contracted support to operations during the OPP. The directorate is CJOC J4 Contracts that participates in the OPP for development of the concept of operations and their activities include developing a contracts support plan based on mission analysis, confirming contracting requirements, and finalizing the contracting plan in support of the operation.[132] CJOC J4 Contracts is also specifically responsible for executing key contracts including CANCAP.[133] Consequently, throughout the OPP and risk management process described previously, the CJOC J4 Contracts staff would be the primary support staff involved in the OPP for planning any contracted support for any proposed or ongoing operations.

During the course of action development when contractor support is considered as a support alternative, its ramifications are also brought into the equation. Research to date confirms there is no hard and fast model that is used in making the decision to use CANCAP.[134] The CANCAP option receives the same consideration during OPP and the support estimate as other options, with the staff being cognizant of the additional risk and force protection requirements that a contractor brings to the table. There do appear to be additional guidelines that are used to guide the contractor support CANCAP decision:

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[132] Joudrey, *Canadian Joint Operations Command Deployed Contracting…*, 13.
[133] *Ibid*., 69.
[134] Lieutenant Commander T.L. Joudrey, telephone conversation with author, 10 February 2016.

a. CANCAP will normally only be used on an established mission;
b. the contractor must be able to provide requested services within ninety days of receiving a task order;
c. when the need for CANCAP to be considered as one of the support options has been identified in the OPP during course of action development, the contractor is given planning guidance and a planning task order;
d. the results of the planning task order indicate the services that can be provided by the contractor as well what additional risk or military assets will be needed to facilitate use of CANCAP. If the decision is made to use CANCAP, a mission task order is provided to the contractor based on the results of the planning task order; and
e. the mission task order must include a risk mitigation plan for contractor personnel. As part of the planning process, the military and the contractor must agree that the risk for contractor personnel is acceptable.[135]

CANCAP and AFGHANISTAN

It must be kept in mind that the CANCAP guidelines are not rigid rules. Their use on established missions was put aside when the decision was made to deploy a two thousand person strong task force to Kabul, Afghanistan in February 2003.[136] Kabul at the time was still reeling from the American shock and awe campaign which toppled the Taliban government in the wake of 9/11. Prior to any large Canadian task force being on the ground, in an immature environment, CANCAP was tasked to construct and support the Canadian camps which would

[135] Assistant Deputy Minister (Materiel), "CANCAP II Briefing September 2013…," slides 8-9.
[136] Perry, "Contractors in Kandahar, Eh?...," 12.

house the Battle Group.[137] Security was provided by existing ISAF forces. From April to August 2003, CANCAP personnel worked feverishly and completed the facilities prior to the arrival of the Canadian Battle Group.[138]

It is evident that the notion of risk and CANCAP use in an established mission is open to interpretation. When the Canadian military was relocating its force from Kabul to Kandahar in 2006, CANCAP was not initially considered a support option as Kandahar was considered too risky for contractor personnel.[139] The intent was to utilize the American LOGCAP contract. It was determined that there were deficiencies with LOGCAP support due to Canadian-unique requirements and differences between Canadian and American standards, especially with regards to communications, engineering projects, and vehicle maintenance.[140]

To correct this gap in support, the Canadian military planners considered that the required military trades were undermanned, that another international operation was being considered at the time which would require military support and manpower, and also that the risk level within Kandahar Airfield "inside the wire" could be considered acceptable to CANCAP personnel. The risk level in Kandahar itself was too high, but within the wire, CANCAP could safely operate.[141] Kandahar Airfield, with its multinational military presence, robust security perimeter and force protection measures, was in itself considered an acceptable location for CANCAP personnel.

ANALYSIS

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[137] Spearin, "Canada and Contracted War…," 527.
[138] Perry, "Contractors in Kandahar, Eh?...," 12.
[139] *Ibid.,* 13.
[140] *Ibid.,* 14.
[141] *Ibid*., 15.

So when the risk itself at first glance is not acceptable for a mission, how the risk is considered, its scope, is adjusted into order to fit the situation. The approach to the problem is adjusted so that the solution can fit the problem. This creative approach permits Canadian military planners to continually find solutions to problems that could stymie other organizations. It can correspondingly increase the risk associated with a solution that needs mitigation. CANCAP is sent into a new theatre, not an established one, ahead of a significant Canadian military presence to prepare the facilities. Then, CANCAP is deployed into a high risk region which it originally said was too risky.[142] The scope of geographical area of high risk is narrowed down in order to make the risk acceptable and manageable, thereby permitting the use of CANCAP.

Risk is relative and accomplishing the mission is the military's main goal. If at first, it appears that the risk is too high to permit CANCAP, the problem will be reframed, innovative solutions will be identified, so that the risk is minimized, the mission is supported, and CANCAP is utilized if possible. Use of a scientific model under these circumstances could inject a degree of rigour and remove a degree of personal bias within the decision making for contractor support. By selecting criteria and alternatives to fit the circumstances, a flexible scientific model can be used to apply the required rigour.

As was manifest in Afghanistan, CANCAP has become a vital component of Canadian military support options that cannot be discounted and must be considered when planning the support for a new mission. Risk management is continually applied throughout the planning and

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[142] *Ibid.,* 13.

execution of operations so that the mission is accomplished while concurrently, where feasible and practical, contractor support is leveraged.

2006 CANCAP REVIEW

In 2006, the Chief of Review Services at National Defence Headquarters, Ottawa, conducted an in-depth review of the CANCAP contract and its performance to date. The review confirmed the strategic objectives of CANCAP which were:

a. to provide the Canadian Forces with additional operational flexibility through an enhanced support capability;
b. to free up military personnel for employment where their military skills were most needed; and
c. to help preserve support-to-warfighting skills in Canadian Forces support forces.[143]

A key observation is that CANCAP was not put in place as a money saving option.[144] It was put in place so that the support component of the Canadian military could continue to perform its mission following the reduction of support personnel in the 1990's. Concurrent with the Force Reduction Plan of the 1990's when support forces were on the chopping block was a high operational tempo not seen since the Second World War. These two factors combined to place an extraordinary pressure on the support forces to meet all their mission commitments. CANCAP was seen as a tool to reduce the pressure.[145]

ANALYSIS

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[143] Department of National Defence, Chief of Review Services, *Evaluation of the Canadian Forces…,* iii.
[144] *Ibid.,* ii.
[145] *Ibid*.

A significant aspect of CANCAP is that it does reflect strategic objectives. CANCAP's objective of preserving support-to-warfighting skills as well as freeing up military personnel where most needed does improve the strategic sustainability of the Canadian military. Military planners have another robust support option to call upon when required for planning an operation and the circumstances support it. Military support personnel will have less deployment demands faced upon them for deployment after deployment, when CANCAP can shoulder some of the burden. Furthermore, military support personnel will not experience skill fade as their function has not been wholly contracted out. The military will retain an in-house capability so that it does not become wholly reliant on CANCAP for various support functions. The effect of CANCAP is that the strategic sustainability of the Canadian military to project force has been improved through CANCAP's incorporation into the force structure and doctrine. The Canadian military needs CANCAP today as much as ever, given the current state of its military support manning. According to the Chief of Military Personnel's statistics, many of the military support trades, including military drivers, cooks, supply technicians, and Resource Management Support Clerks, are classified as yellow or red due to being undermanned. Table 5.3 provides a snapshot on the status of military occupations in the Canadian military as of October 2015.

Table 5.3: Support Occupation Status

OCCUPATION/MÉTIER		Forecast TS for 31 Mar 2016 / Prévision NPD pour 31 mar 2016	Forecast PML for 31 Mar 2016 / Prévision EQA for 31 mar 2016	% TS vs PML 31 Mar 16 / % NPD c. EQA 31 mar 16
	LOGISTICS OFFICER	1,538	1624	94.7%
	CONSTUCTION ENGINEERING SUPERINTENDANT	163	217	75.1%
	CONSTRUCTION TECHNICIAN	158	168	94.0%
	ELECTRICAL GENERATING SYSTEMS TECHNICIAN	113	127	89.0%
	AMMO TECHNICIAN	208	219	95.0%
	COOK/CUISINIER	906	1042	86.9%
	MOBILE SUPPORT EQUIPMENT OPERATOR/DRIVE	1,422	1616	88.0%
	POSTAL CLERK	124	122	101.6%
	RESOURCE MANAGEMENT SUPPORT CLERK	2,790	3081	90.6%
	SUPPLY TECHNICIAN	2,361	2678	88.2%
	TRAFFIC TECHNICIAN	676	704	96.0%
NOTES:	1. Drawn from Chief of Military Personnel Report Downloaded from Defence Intranet 14 April 2016.			

TS- Trained Strength. PML- Projected Manning List. Green – Occupation manning is sustainable. Yellow – Variance between TS and PML between 5-10 % below PML. Red – Variance between TS and PML greater than 10 % below PML.

Source: Department of National Defence, Director Personnel Generation Requirements, "Occupation Status and Occupation Transfer Out Cap Matrix Report, dated 30 October 2015," Defence Intranet accessed 14 April 2016, http://cmp-cpm.mil.ca/en/support/military-personnel/dpgr-index.page.

As can be seen from Table 5.3, many support military trades are undermanned and are at risk of being unsustainable over the long term. CANCAP provides a relief valve for stressed support occupations with lower manning.

The 2006 review made several recommendations for improving CANCAP's management and effectiveness. One of the recommendations was for the introduction of integrated risk management for managing CANCAP, including the use of a computer-based decision model to "support options analysis when considering the use/non-use of CANCAP and setting risk

mitigation priorities."[146] Research confirms that no such computer model has been developed or is in use within the Canadian military.[147]

DOCTRINAL ANALYSIS

Contractor support in itself is a risk mitigation measure. It is evident that since the Cold War's end, contractor support has evolved from being a risk mitigation measure to being a valid alternative that stands on its own with regards to supporting deployed operations. Since many militaries, including the Canadian military, are not likely to be self-sufficient when conducting operations, contractors have become a part of the force structure and routine business. The distinction between the various militaries becomes one of degree of incorporation of contractor support into their planning and doctrine. That degree of distinction is evident when contracted support is required to be considered by orders or regulation, as opposed to a custom. The distinction is clearer when it is considered a last-ditch option after all other options are explored, as opposed to being an option to be considered with other support options as a matter of routine. When these, and other, distinctions are considered, the degree of integration of contractor support into a military's doctrine and practice becomes evident.

Review of the doctrine of planning and decision making for contractor support between the United States military, the United Kingdom military, and the Canadian military shows distinctions between the various organizations' doctrines and uses of their contractors. David Singer noted in 2006 that there was little evidence at the time that the doctrinal and strategic implications of privatizing military services had been considered and that contractors needed to

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[146] Department of National Defence, Chief of Review Services, *Evaluation of the Canadian Forces…*, 18.
[147] Lieutenant Commander T.L. Joudrey, telephone conversation with author, 10 February 2016.

be integrated into the planning process.[148] It appears that these observations have been addressed to some degree. Each doctrine recognizes the requirement to plan for contractor support early in the OPP. The United States military has LOGCAP planners and contractor personnel embedded within their various commands and organizations and have been directed by the Pentagon to incorporate operational contract support directly into their planning during their mission analysis stage and on into their courses of action development to a plan. The United Kingdom military at Permanent Joint Headquarters (PJHQ), with its embedded contractor personnel and its dedicated contractor support planning teams, would consider contractor support in step two of the operational estimate, in the mission analysis and consideration of objectives and planning factors. PJHQ military planners would continue to develop the contractor support option throughout course of action development and subsequent steps of the operational estimate. In Canada, CJOC J4 Contracts planning staff are integrated early in the OPP in stage one, initiation. Stage two, orientation will identify potential requirements for contractor support. J4 Contracts staff will engage contractor staff with a planning mission task order and planning guidance either during stage two or stage three, course of action development.

Each military organization considers contractor support early in their planning process, normally by mission analysis; course of action development normally firms up the requirement for contractor support as force packages are considered. From review of the doctrine, it is evident that actual contractor personnel are embedded and wholly integrated into the planning cycle within the United States and the United Kingdom militaries. In Canada, the CJOC J4

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[148] Singer, *Corporate Warriors – The Rise…,* 206.

Contracts personnel acts as the conduit with CANCAP personnel and does not have them at the table during the process; CANCAP personnel are not embedded within the staff.[149] In the United States, consideration of contractor support is directed from the Pentagon; it is an order. In Canada, it is a guideline to consider contractor support. In many cases it becomes necessary due to support occupation manning shortfalls. What is common is that contractor support is routinely considered early in the planning process as opposed to being an afterthought.

The organizations considered are national military organizations, namely Canada, the United States, and the United Kingdom. Each national military has undergone reductions following the Cold War and each military has contracted logistical support with a single task order contractor. In the United States, LOGCAP has been in use since 1985 and has gone through several iterations. The LOGCAP contractor is currently Kellogg-Brown-Root (KBR), a component of Halliburton International. In the United Kingdom, the OSCC contract was initially signed off in 2004 and continues to be used by the UK military. KBR is the OSCC contractor. Within Canada, CANCAP has been in place since 2002 and was renewed for another term in 2013. The CANCAP contractor is SNC-Lavalin PAE. These are established contracts that have been used, proven their value, and are not going away. Given this factor, contractor support needs to be planned for, accepted, and exploited. The decision to use contractor support with its ramifications must be refined to ensure that support to the operation is maintained. Since contractor support is not going away, this refinement is essential.

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[149] Lieutenant Commander T.L. Joudrey, telephone conversation with author, 10 February 2016.

Of the various doctrines considered, it appears that only the United Kingdom's PJHQ has a decision model using algorithms that is available for planners when considering risk management and planning for contingencies. The other considered doctrines provide guidelines within their respective support staff processes to consider contractor support, its implications, and the risk management planning to take place. That being said, use of a computer based decision model would subject the process to a degree of rigour and remove personal bias which could benefit military planners when considering contractor support. The model results could be incorporated into OPP analysis so that it is another gauge, another indicator that staff and commanders use when deciding on deployment of contractor support. Think of it as another slide to be used during the decision brief to the commander. It would be another tool that support planners could use in their staff toolbox. The 2006 CANCAP review recommended a integrated risk model approach for Canada similar to that of the United Kingdom, but it has not been implemented.[150] The current status of CANCAP needs to be reviewed next to provide situational context.

CURRENT CANCAP CONTRACT

CANCAP in its current iteration is a formidable capability for the Canadian Armed Forces when deployed on operations. As of 2016, there are no Canadian military deployments overseas which are being supported by CANCAP.[151] With the end of large scale military deployments in Afghanistan and with no large scale military deployments ongoing under the

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[150] *Ibid.*
[151] *Ibid.*

guise of NATO or a coalition force, CANCAP is not currently required. The contract is in effect dormant.

The first contract did have CANCAP personnel embedded in the staff at the Joint Support Group formation ten years ago to facilitate planning, execution and monitoring of CANCAP services. At this time, there are no CANCAP personnel embedded within the Joint Operations Support Group or within CJOC.[152] This factor does raise the concern of skill fade.

Unlike LOGCAP in the United States military, CANCAP is not involved in Canadian military exercises planning, execution, or support.[153] LOGCAP staff exercise with their American military counterparts on various military exercises to remain current with policies, procedures, and personnel. Canada does not employ CANCAP in an exercise capacity when there is no large scale deployment overseas requiring CANCAP support. Military planners do not get exercised for planning the use of CANCAP in OPP as a result. One could argue that a degree of skill fade takes place. As a capability is not used, familiarity with processes and procedures fade over time. Combine this skill fade with posting of personnel on a continuous basis and there is a possibility that when the time comes for CANCAP to be planned for and considered to support a mission, there could be delays and errors in the decision making process as planners get current with processes and procedures as well as capabilities. This complication could be alleviated by having CANCAP exercise its staff with its client, the Canadian military, which would ensure that the military planners and staff would also maintain currency, resulting

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[152] *Ibid.*
[153] United States, Department of Defence, *Joint Publication 4-10 Operational Contract…,* II-6.

in improved decision making and speed of execution. Using a contractor support decision model during exercises would integrate its use into the process and improve its effectiveness as well.

Doctrine from the three military organizations considered have several similarities and differences concerning contractor support decision making. Canada and the United States do not use decision making models for contractor support, while the United Kingdom does. Canada doesn't have embedded contractor personnel in the OPP while the United States and United Kingdom do. CANCAP's employment has not always followed doctrine, indicating that where required, military planners will reframe the situation and analysis to provide more flexibility. Canada's military planners currently face a risk of skill fade as the CANCAP contract is effectively dormant right now and it is not being used on exercises within the Canadian military. A decision making model for contractor support needs to be put in place that is flexible to meet different situations of risk, can be used in exercises to maintain current skills, that can be integrated into the OPP and be used as another gauge and indicator for staff. Such a model would improve decision making for CANCAP and deployed support for military forces. The scientific basis for this model, AHP, must be explored.

CHAPTER 6 – ANALYTIC HIERARCHY PROCESS

The Canadian military does not use a specific decision making model for contractor support to deployed Canadian military forces. The OPP provides the framework within which the support staff perform their subordinate processes in support of the OPP to develop and execute support options for the commander's plan. To develop a decision making model, what is

the best method on which to base the model? The Analytic Hierarchy Process (AHP) is the logical basis for a decision making model. The theory of Appreciative Inquiry was considered but later dismissed as it does not normally apply well in a post-identity system; a post-identity system is a system in which a majority of the members within the social system identify with it, as opposed to a pre-identity system in which the majority of members do not identify with the social system. In post-identity systems, members account for the needs and interests of the system and may sacrifice personal interest for the betterment of the system.[154] A military organization is a classic example of a post-identity system.

The AHP was developed by Dr. T.L. Saaty in the 1970's. It is based on pairwise comparison of elements of a situation by a group of experts in terms of importance, preference, or probability. Elements are established in a matrix (paired) and given a judged weight as to their importance in the situation.[155] The Saaty scale used for establishing values is normally from one to nine, with one being least valuable, and nine being the most valuable.[156] See Table 6-1 for the scale.

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[154] G.R. Bushe, "Appreciative Inquiry: Theory and Critique," in *The Routledge Companion to Organizational Change*, ed. D. Boje, B. Burnes, and J. Hassard. 87-103 (Oxford: Routledge, 2011), 92.

[155] James S. Finan and W.D. Macnamara, "An Illustrative Canadian Strategic Risk Assessment," *Canadian Military Journal* 2, No.3 (Autumn 2001): 30, accessed 28 July 2015, http://www.journal.forces.gc.ca/vo2/no3/doc/29-34-eng.pdf;.

[156] Geoff Coyle, "The Analytic Hierarchy Process,": 2, accessed 28 July 2015, http://www.booksites.net/download/coyle/student_files/AHP_Technique.pdf;.

Table 6.1: Saaty Rating Scale

Intensity of importance	Definition	Explanation
1	Equal importance	Two factors contribute equally to the objective
3	Somewhat more important	Experience and judgement slightly favour one over the other.
5	Much more important	Experience and judgement strongly favour one over the other.
7	Very much more important	Experience and judgement very strongly favour one over the other. Its importance is demonstrated in practice.
9	Absolutely more important.	The evidence favouring one over the other is of the highest possible validity.
2,4,6,8	Intermediate values	When compromise is needed

Source: Coyle, "The Analytic Hierarchy Process," 2.

The resulting matrices are then used to calculate the relative weights of each element in relation to the other elements in the situation. The result is called an eigenvector. These eigenvectors provide the hierarchy of relative importance of each element and can be used to calculate an overall eigenvector which defines the weight of each element within the situation.[157] The matrix algebra can be quite daunting to go through but it is not necessary to understand algebra to comprehend that the AHP can be of great benefit in decision making.

The AHP has been used by many organizations over the years to address a variety of different situations with great success. In 2001 the Turkish government used the AHP to determine the best relocation site for the earthquake devastated city Adapazari.[158] A company used it in 1987 to choose the best type of platform for drilling oil in the North Sea, an asset with

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[157] *Ibid.*, 2-3.

[158] Thomas L. Saaty, "Relative Measurement and its Generalization in Decision Making,": 253, accessed 11 September 2015, http://www.rac.es/ficheros/doc/00576.PDF;.

a value of $3 billion.[159] The American government used AHP in 1995 to determine the best way to deal with China in a disagreement over intellectual property rights concerning music, movies, and videos. The analysis demonstrated the best way ahead for the American government and laid the foundation for a positive resolution.[160] In 1986, a government-backed institute in South Africa used AHP to analyze the conflict related to apartheid. Recommended actions based on the AHP results included the release of Nelson Mandela, removing apartheid, and granting full rights and citizenship to the black majority. All these actions were instrumental in ending the South African conflict.[161] As is evident in these various examples, AHP can be used in wide variety of situations from a tactical to a strategic level with positive results. AHP has proven itself to be a versatile and reliable tool to address many situations successfully.

ANALYSIS

The AHP has its benefits and risks which need to be considered when its use in contemplated. The greatest benefit of AHP is its ability to rank choices in order of effectiveness when meeting conflicting objectives.[162] The judgements used to define the weights in AHP need to have been made in good faith; if so, AHP will calculate and confirm the logical conclusion of these judgements in a consistent manner. AHP, by incorporating judgements by experts, also incorporates any inherent biases the experts have. The biases are then subjected to normalization and rationalization through the AHP. Errors in judgement caused by biases are likely to be

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[159] *Ibid*.
[160] *Ibid.*
[161] *Ibid.*
[162] Coyle, "The Analytic Hierarchy …," 7.

identified as inconsistencies by AHP; inconsistent judgements then can be set aside.[163] AHP permits assessment of consistency in any pair-wise comparisons and does so effectively, without requiring one hundred per cent consistency.[164] The broad use of AHP by many organizations over the years is evidence of its success and its ability to be a powerful tool in the hands of decision makers.

There are risks as well when considering AHP. It only works if the matrices used to set the pairwise comparisons are the in the same mathematical form. For example, if we use the number nine to say A is more important than B, then the relative importance of B to A must be 1/9. This form must be maintained to permit the AHP to work.[165] Furthermore, the scale used must be consistently used across all matrices and choices, to make the results consistent and open to analysis.[166] Another risk inherent in the use of AHP, like any mathematical model that can based on computers, is the perception that what the model and computer indicates is the whole truth. Decision makers and staff officers can develop tunnel vision and believe that computer model and simulations provide all the answers that are needed in any given situation. It must be remembered that AHP is another tool to be kept in the staff officer and decision maker tool box. Results that are derived from AHP must be put into context of the overall situation with the acknowledgement that it is impossible to have perfect information to make decisions. In such an atmosphere, AHP can be used to great benefit to when used in conjunction with professional judgement and other information available to decision makers. In the context of the OPP, AHP

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[163] *Ibid.,* 8.
[164] Finan and Macnamara, "An Illustrative Canadian …," 30.
[165] Coyle, "The Analytic Hierarchy …," 8.
[166] *Ibid.*

could be a powerful indicator in discriminating between competing and conflicting courses of action in order to meet various objectives and achieve the desired end-state.

AHP, being based on mathematical computation of subjective judgements, is well suited to software development. There are many decision making software solutions available on the commercial market that are based on AHP. If AHP was deemed to be an appropriate solution to decision making when deploying a civilian contractor in support of operations, acquiring the required software, if not developing it in-house, would be a simple matter for the Canadian military.

AHP, in effect, can take qualitative judgements of a group of experts, and subject them to scientific rigour and scrutiny. The results are consistent and can be repeated. It is imposing a degree of order and logic on qualitative judgement. AHP's basis for a decision making model for contractor support can be developed by use of an example demonstrating how the Canadian military is making logical decisions during the OPP with regards to deploying CANCAP contractor support.

CHAPTER 7 – CANCAP AHP DECISION MAKING MODEL

The Canadian military does not use a specific decision making model during the OPP for deciding whether or not to deploy CANCAP. This paper asserts that a model based on AHP can be used to support CANCAP decisions. The decision whether or not to deploy CANCAP is influenced by various criteria which must be reflected in the decision making model. The details of the specific situation will dictate which criteria will be of higher importance or lower

importance. For example, the criteria of risk of casualties will be of higher importance in a new, hostile theatre of operations than in a mature, stable, permissive theatre of operations. It can be inferred that the criteria to be considered then for each possible deployment will change in either priority or even consideration. The environment of the theatre of operations, the domestic and political situation, the current commitments and available resources of the Canadian Armed Forces, are all factors which will influence what criteria will be considered when the decision will be made to deploy military assets as well as deploying CANCAP.

FRAMEWORK

A framework and model must be flexible enough to meet these different situations. Fortunately, the framework within which the model would be used is already in place and has proven its value to the Canadian military as well as its allies. The OPP is the framework within which the model must work. The decision to deploy CANCAP is not made until a course of action is decided upon which includes CANCAP for support. Within the OPP, as described previously, CANCAP is identified as a possible support option during stage two of the OPP, orientation. CANCAP personnel are given a mission planning task order and guidance for the possible operation. The CANCAP option is developed as a support option by the support staff in stage three during course of action development for decision by the commander. In stage four, plan refinement, the details are worked out on how CANCAP will be implemented for the specific operation. Given this framework, any CANCAP decision model would be prepared and data populated during stage two and the initial part of stage three. The model would then be put into use in stage three during the course of action development. The results of the model could then be incorporated into the courses of action and subsequent plan.

JOINT OPERATIONS PLANNING GROUP

To make the AHP model work, a group of experts are needed to make the required judgements. The personnel best qualified decide upon the criteria and then make judgements on the criteria are already a part of the framework of the OPP, namely the Joint Operations Planning Group (JOPG). The JOPG that is convened at CJOC contains a cross section of staff officers and Non-Commissioned Members of various ranks and occupations. This cross section includes:

a. staff officers representing the commander of CJOC in operations (J3 staff) who are responsible for leading and conducting the JOPG;
b. the various services, including the Army, Royal Canadian Air Force, and Royal Canadian Navy;
c. numerous staff officers representing specialized occupations including logistics, medical support, legal advice, public affairs, engineering, and other support occupations;
d. staff from other commands within the Canadian Armed Forces or groups within the Department of National Defence (for example, the Materiel Group which is headed by the Assistant Deputy Minister (Materiel)) which may be involved or impacted by the operation being considered; and
e. representatives of other government departments that may be involved or be impacted by the operation being considered.

The composition and size of the JOPG will be dictated by the size and type of operation being considered. A small domestic operation will have relatively few participants outside the Canadian Armed Forces. A large scale deployment in a war-fighting capacity, such as

deployment to Afghanistan post 9/11, would have a large JOPG with participation from all across the government. If a JOPG is considered too large and unwieldy for participating in the model process, a grouping of support staff officers from the JOPG could be used to complete the model. The grouping would include logistics staff, medical staff, and other support staff deemed necessary for completing the model.

CRITERIA

It can be anticipated that a few key criteria would be common to most operations being considered. These criteria would include the risk of casualties in the probable theatre of operations, the manpower resources available in the military support occupations to support the operation, and the host nation support in the proposed theatre of operations. The risk of casualties would be a consistent criteria as military commanders will routinely consider the risk to the personnel under their command when deciding on a concept of operations. Risk of casualties would also have an influence on any political and governmental decisions with regards to deploying Canadian military personnel or contractor personnel overseas. There is very little appetite within government circles for the media fallout of Canadian military personnel being wounded or killed overseas. The manpower availability criteria would have an impact on the sustainability of the mission over the mid-term and long-term planning horizons. As noted earlier, the intent is that Canadian military support personnel would do the first and subsequent rotations in a theatre of operations until the risk was assessed acceptable to deploy CANCAP. While these personnel are deployed on an operation, they are not available to support other operations that may be required. In addition, as noted earlier, military support occupations can be strategically undermanned over a period of time and as a result, support to more than one or

two rotations may not be sustainable or feasible. One reason CANCAP was established was to provide an enhanced support capability to mitigate this sustainability concern.

The available host nation support of a probable theatre of operations would be a criterion as well for deciding on deploying CANCAP. Transportation networks, including roads, airports and seaports, as well as the host nation economy will impact on deployment and the lines of communication as well as support that is derived from the local economy. If there are extended lines of communication with a devastated local economy and infrastructure, any support option deploying will have to adapt its configuration to deal with these issues. More equipment, personnel and other resources may be required to be delivered and supported over extended lines of communications in a short time frame. Consequently, if CANCAP was considered in such a situation, the resource requirement will have significant impact. If a large CANCAP presence, for example, is required in a hostile theatre with poor infrastructure and an underdeveloped economy on another continent over extended lines of communications, then significant military resources will need to be committed to moving the contractor, as well as identifying facilities and resources in theatre, and finally committing force protection assets and taking measures to ensure the safety of CANCAP personnel, materiel, and resources.

ALTERNATIVES

For the design of the contractor support decision model, in any given situation, there will be a minimum of two alternatives put forth - to deploy with CANCAP or to deploy without CANCAP. Deploying with CANCAP resources could then be assessed against deploying with military resources. Other alternatives could be added as well to reflect other factors, such as delayed deployment of CANCAP or deployment with support of multinational partners. The

criteria would be risk of casualties, available manpower in military support occupations, and host nation support. The details of the operation and the theatre of operations, which would be identified in step two of OPP, orientation, would be used as a basis for identifying the level of risk, the available manpower, and the condition of host nation support. The JOPG would do pair-wise comparisons of the criteria to decide which criteria has the most weight, given the situation. Following computations, the model would be able to identify the preferred course of action.

Note that any alternatives or criteria can be identified for consideration by the JOPG; there are no fixed criteria. Experience of the JOPG would determine what would be the best criteria or alternatives to use for any given situation in the decision making model. Completing an example will provide demonstrate the workings of the model.

The following example was developed by the author based on work experience within National Defence Headquarters and the Canadian Operational Support Command (CANOSCOM) as a staff officer planning the logistical support to Canadian expeditionary military operations from 2003 to 2007. CANOSCOM was absorbed into CJOC in 2014. The particular parameters for this example were selected by the author as he assesses that it is foreseeable that any eventual peace settlement to the Syrian civil war can include a military presence, whether United Nations or coalition. Canada would contribute to any peacekeeping force given the current Liberal government's indicated desire to support peacekeeping operations. Historically, army contributions have ranged in size from company to a battalion, contingent on requirement. A helicopter detachment would be reasonable to deploy as well, given historical helicopter deployments to Haiti and the Sinai Peninsula. Furthermore, review of

military manning projections indicates that various support trades are expected to be understrength for the next two years. Other conditions for the example are based on comparison with other environments within the Middle East. For example, Iraq and Libya, following the Arab Spring, have retained much of their civilian infrastructure but force protection is still a concern due to lack of civil authority. The Syrian government, in contrast, has retained control of Damascus for the most part throughout the civil war. The author's intent is setting realistic conditions for the example so that the model can be used in a realistic manner.

EXAMPLE

For this example, two years in the future, CJOC is considering deploying a task force of approximately one thousand and two hundred personnel to Syria as part of a peacekeeping mission at the end of the Syrian civil war. The task force will consist of a battalion of mechanized infantry as well as a detachment of three helicopters with flight crew and support personnel. The location of deployment will be on the outskirts of Damascus. Intelligence assessment puts the level of risk of casualties as low to moderate, given the pacification measures taken by the Syrian government leading up to a ceasefire. The destruction of ISIS in the northern part of Syria has been considered as a large factor in decreasing the risk of casualties. Support trades within the Canadian military are in a rebuilding mode following the Afghanistan deployment. As such, it is anticipated that, with regards to manpower, two rotations can be supported by military support occupations before sustainability becomes a concern. The local economy has been heavily disrupted by the civil war but is able to provide most essentials within Damascus itself. The transportation infrastructure is in fairly good condition and will be

able to support deployment and operations of the task force. The power grid within Damascus is functioning sporadically.

The goal of the model process for this example is to decide whether or not to deploy CANCAP to support the task force. This goal lays out then two fundamental alternatives to consider – to deploy with CANCAP resources or to deploy without CANCAP resources. Another alternative to consider for this model is whether to deploy CANCAP after two rotations. This last alternative is being used as one of the objectives of CANCAP was to deploy into relatively stable theatres of operation after it has been stabilized by military forces. For this example, the previously discussed criterion are risk of casualties, manpower availability, and host nation support.

There are many available software products on the consumer market for AHP decision making. Some products cost thousands of dollars and provide deep analysis of the process. At the other end of the spectrum, there are small basic programs available for free. For the purposes of this example, the program *Open Decision Maker* which is available for free online will be used.[167] This program weights criteria and sub-criteria and then processes the results to determine the best alternative. It also generates a basic report with the salient results.

When the goal, alternatives, and criteria are entered into the software, the program then has the user do pair-wise comparisons of the criteria. These comparisons will help establish the weights to be used. It would be a JOPG which would determine which criteria would be used and would do the judgement for the comparisons using the Saaty scale. Additional sub-criteria

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[167] Sourceforge. "Open Decision Maker Software," accessed 25 February 2016, https://sourceforge.net/projects/opendecisionmak/;.

are military or civilian casualties for the Risk of Casualties criterion, and for Host Nation Support, sub-criteria are transportation networks and economic conditions. The sub-criteria will also be judged.

In weighting the criteria, assume the JOPG decided upon the following weights as seen in Figure 7.1:

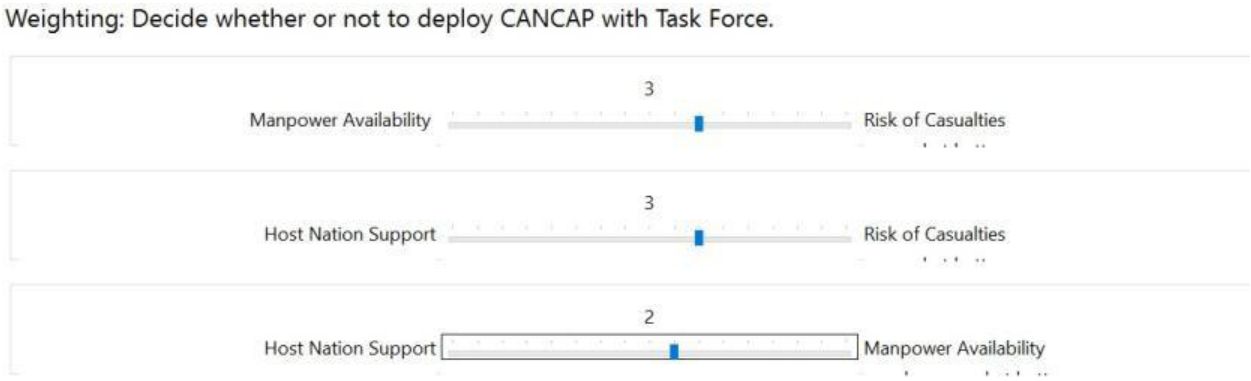

Figure 7.1: JOPG Weighting

Source: *Open Decision Maker Program*, 25 February 2016.

Under the Saaty scale, these weights show that the JOPG determined that the Risk of Casualties criterion was somewhat more important than the Manpower Availability and the Host Nation Support criteria. Manpower Availability was shown to be a bit more important than Host Nation Support. Sub-criteria for the Risk of Casualties criterion were judged by the JOPG as follows:

Figure 7.2: JOPG Weighting

Source: *Open Decision Maker Program*, 25 February 2016.

The JOPG determined that while all casualties are to be avoided, military casualties were considered somewhat more important than civilian casualties as military personnel are required to complete the mission and are versatile for employment. Sub-criteria were judged as follows:

Figure 7.3: JOPG Weighting

Source: *Open Decision Maker Program*, 25 February 2016.

When considering the Host Nation Support criterion, the transportation network was considered somewhat more important than the economic conditions. This judgement could be influenced by the need to plan deployment of the task force as well as establishing and maintaining lines of communication within and outside the theatre of operations.

The model then uses the criteria and sub-criteria weights to do pair-wise comparisons for the alternatives as judged by the JOPG. When the military casualties' sub-criterion was considered, the JOPG determined the following:

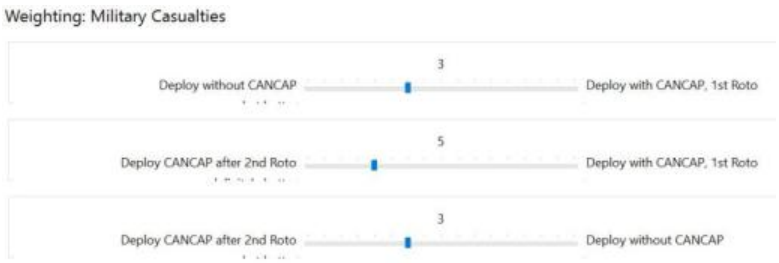

Figure 7.4: JOPG Weighting

Source: *Open Decision Maker Program*, 25 February 2016.

With regards to military casualties, it was decided that it was much more important to deploy CANCAP after the third rotation of personnel into theatre. This judgement reflects a desire to establish a secure environment with military resources prior to using CANCAP as using CANCAP in a hostile environment would require military resources for force protection. For civilian casualties, the JOPG assessment of the alternatives was:

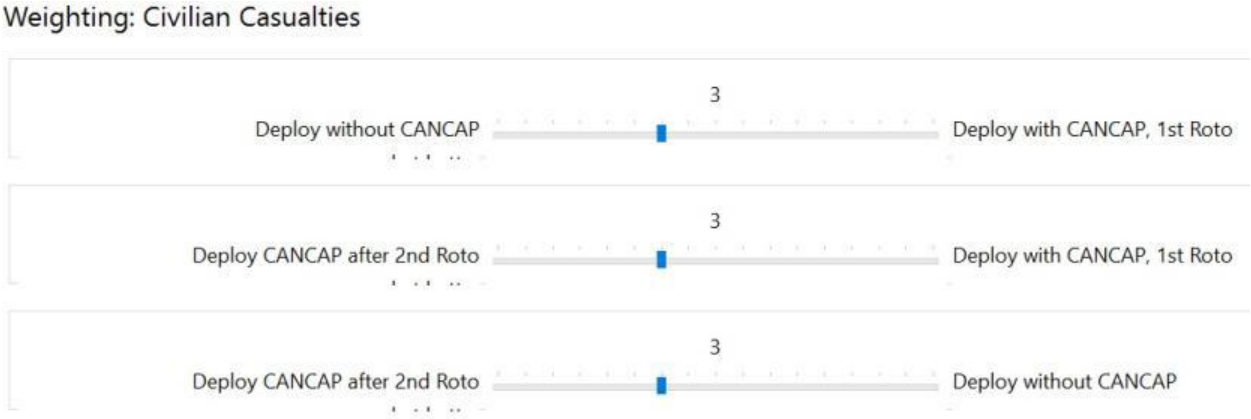

Figure 7.5: JOPG Weighting

Source: *Open Decision Maker Program*, 25 February 2016.

The JOPG determination indicates overall that it would be best to consider deploying CANCAP after the second rotation with regards to civilian casualties. With regards to manpower availability, JOPG judgement confirmed that it was much more important to deploy CANCAP after the second rotation:

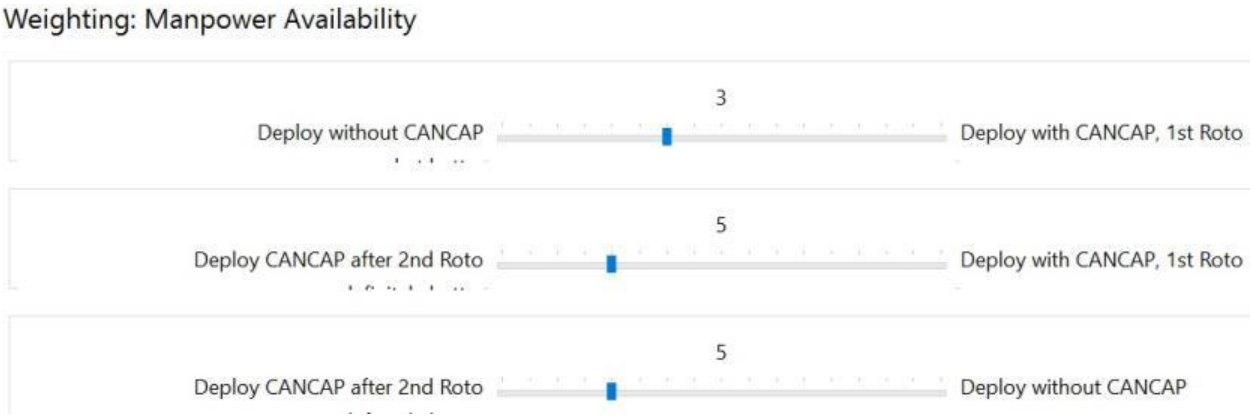

Figure 7.6: JOPG Weighting

Source: *Open Decision Maker Program*, 25 February 2016.

This judgement would be based on the questionable sustainability of using military support trades after two rotations as opposed to using CANCAP at that time. The JOPG's assessment of the alternatives with regards to transportation networks and economic conditions were as follows:

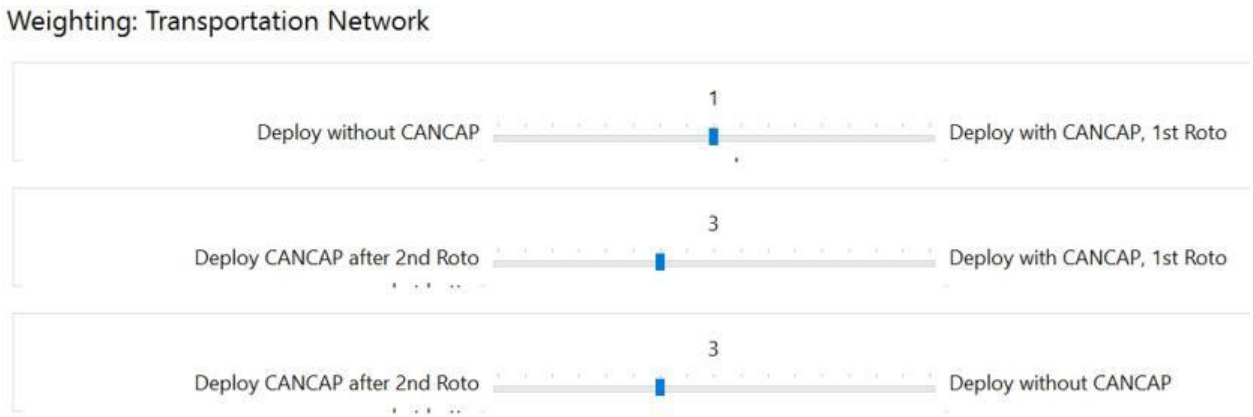

Figure 7.7: JOPG Weighting

Source: *Open Decision Maker Program*, 25 February 2016.

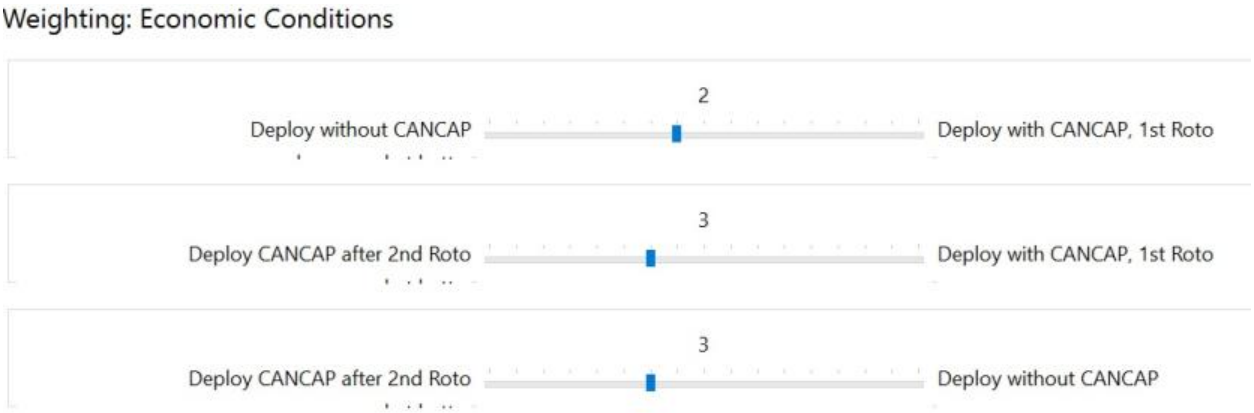

Figure 7.8: JOPG Weighting

Source: *Open Decision Maker Program*, 25 February 2016.

The JOPG determined that there would be somewhat more important to deploy CANCAP on the second rotation with regards to transportation networks and economic conditions as by this time the theatre would be more stable, deployment into theatre of personnel and equipment had been completed, and the local economy would have recovered to some degree to support and provide CANCAP services.

It must be kept in mind that these JOPG judgements being put forth are based on experience as well as a plausible scenario for deployment, coupled with knowledge of the CANCAP program objectives. By no means are these values to be taken as gospel, but to be considered as having some basis in reality and probable outcomes, and are being used for illustrative purposes only. JOPG determinations may vary, based on the context of the situation. The point is that the AHP model can be easily used during the OPP to support making decisions and improve the process.

At this point, the AHP model does the matrices algebra calculations and displays the results, providing the weighting determined by the JOPG and how that resulted in the best

alternative being selected. The software also displays the consistency ratio. This measurement is an indicator that a weighting is consistent throughout the assessment. If the result is reported in red, then there may be some question as to whether a weight was biased or judged inconsistently. It provides an indicator where the JOPG may want to reconsider some judgements within the model. This consistency is one of the strengths of the AHP model, as it shows that results will not be random over time, but consistent, thereby laying the foundation for predicting outcomes to some degree. Figure 7.9 shows the results:

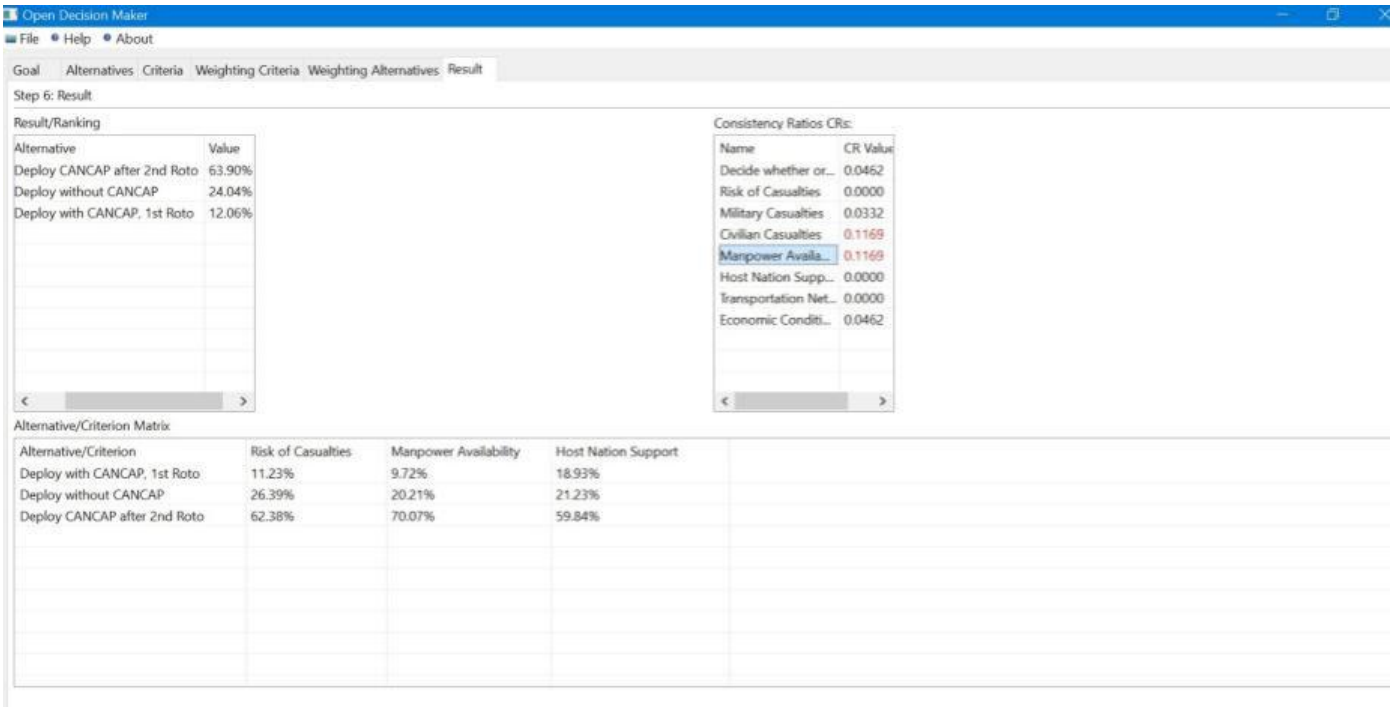

Figure 7.9: Results

Source: *Open Decision Maker Program*, 25 February 2016.

As can be seen from the results, the JOPG judgement has determined that it would be best to deploy CANCAP after the second rotation. A full report is also generated and is attached as Appendix 1.

ANALYSIS

The AHP model, in using the judgements of the JOPG, has set priority to the alternatives being considered. The first priority, the deployment of CANCAP after the second rotation, confirms the JOPG's judgement and is aligned as well with the policy of using CANCAP in a mature theatre. Furthermore, the results reflect the incorporation of strategic concerns into the model. The strategic issue of support trade manning over the mid-term and long-term planning horizons was incorporated as a criterion into the model and as such, included strategic influences and factors into the model and the judgements of the JOPG. As a result, decisions can be made based on the qualitative JOPG judgements which has been subjected to a degree of scientific rigour and consistency. To improve the results, especially the consistency ratio, the JOPG could run through the model again and adjust its judgements to improve the consistency. The model, like many software applications, is only as good as the data put into it. The consistency result helps identify where criteria or alternatives may need to be reconsidered or where bias is present. The complexity of the situation can also be reflected by use of additional criteria and alternatives in the model. The JOPG can now continue with the OPP with the development of courses of action for the commander's decision, followed by allocation of resources and the planning of the support for the mission.

The CANCAP model is an indicator and an instrument for measuring the value of deploying CANCAP support. It can be used in OPP analysis to determine the best support course of action available under various conditions and circumstances by setting different criteria and conditions in the model. The model's outcome can be integrated simply into a decision brief to the commander. The model's inherent flexibility and adaptability provides empirical evidence

and analysis to the OPP that makes the decision to deploy CANCAP rational and incorporates expert JOPG judgement.

Any incorporation of the CANCAP model into the OPP will face resistance. Organizations prefer stability and consistency and are reluctant to change.[168] Nevertheless, organizations must change over time if they are to remain viable and relevant to the evolving external environment. In such an environment, any attempt to introduce a process which will incorporate new technology and cognitive innovations will meet with resistance.[169] Military personnel resist change when they are not certain that it is necessary, appropriate, or sufficient.[170] Any introduction of the CANCAP model will require the support of senior leadership as well as education of affected staff and commanders, as well as doctrine writers and military educators, on the benefits of the CANCAP model and how it can be used to improve support to military operations.

In reviewing the information and results from the example, it can be seen that the CANCAP decision making model incorporates the following factors:

a. the model is used in the framework of the OPP;

b. the model is based on the AHP;

c. the group of experts doing pairwise comparisons is based on the JOPG;

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[168] Lieutenant Colonel Jeffrey Kelly, "Resistance to Organizational Cultural Change in the Military – A JFO Case Study," (Carlisle Barracks, Carlisle Pennsylvania: United States Army War College Strategy Research Project Paper, 2008), 2.
[169] Major Jason M. Pape, "How the Army Resists Change," (Fort Leavenworth: School of Advanced Military Studies, United States Army Command and General Staff College, 2009), 11.
[170] *Ibid.,* 30.

d. the model's criteria and alternatives are established by the JOPG so that the circumstances fit the particular situation and that any strategic considerations that need to be considered are incorporated into the model;

e. personal bias is detected through inconsistency analysis by the software and as such, can be accounted for and then allow the model to be run again to remove bias as much as possible;

f. the model results are very consistent but not 100% consistent;

g. the model results, contingent on the software being used, can be used to decide on the best course of action, the allocation of resources, and the setting of priorities; and

h. the model results are an indicator, a gauge, an instrument for deciding on the best manner to deploy CANCAP, if it is to be deployed at all. These results can easily be incorporated into a decision brief to the commander during stage three of the OPP.

The AHP model can be a powerful tool for decision makers in deciding whether or not to deploy CANCAP in support of an operation. Its imposition of scientific rationality onto qualitative judgements of experts with the aim of consistent results lends itself to use in the OPP in decision making and analysis. The personal bias of the experts is accounted for in the process and can be detected and adjusted for using the inconsistency ratio of the model. The model's success is contingent upon selection of appropriate criteria and alternatives for the situation as well as use of a group of experts who can make consistent judgements when doing pair-wise comparisons. By using this valuable tool in conjunction with the JOPG's experience and the

products from the OPP, the decision on whether or not to deploy contractor support into a theatre of operations can be made quickly. The JOPG can proceed with the confidence of basing their recommendations to the commander on their experience, their judgement, and the use of a tried and true scientific model.

CHAPTER 8 – RECOMMENDATION AND CONCLUSION

The decision making process with regards to deployment of civilian contractors in support of overseas operations is an issue which has evolved since the end of the Cold War. Contractor support is an important component of military structure that is relevant in today's operational environment. History has shown that civilian contractors have supported military forces since before the advent of Christianity. Total war during World War II laid the foundation for militaries to be more self-sufficient in the field as it was felt in a total war environment, civilian contractor dependability would be questionable and could impact detrimentally on operations. This mindset continued into the Cold War amongst western militaries. Following the Cold War, the requirement for a peace dividend led many western governments, including Canada, to reduce military budgets and size. These reductions were normally focussed on support units, in an effort to maintain fighting capabilities. In order to maintain support capabilities at lower costs, civilian contractors were seen as viable solutions to fill the gap.

The use of civilian contractors has risks as well as benefits. Benefits include maintaining required support services to military forces at a lower cost, while risks include loss of service in a hostile theatre of operations as civilians cannot be compelled to work in such an environment.

To mitigate risks and facilitate contractor support, it is necessary to normally commit military resources for issues such as force protection.

Civilian theory with regards to contractor support of military operations has advanced within recent years. David Singer's categorization of the private military market indicates the military support firm is the best fit to provide contractor support to military operations. Agency theory provides a theoretical framework to explain the reasoning and objectives behind the contracting out of government services. Theory also underlines the risks and complexity of any outsourcing which must be mitigated with control measures and monitoring. Canada has the requisite measures in place with training as well as dedicated contract management organizations at the strategic, operational, and tactical levels.

Military planning doctrine and risk management in many western militaries, including Canada, have evolved to incorporate civilian contractors as a logistics factor to be considered early in the planning process. The United States and the United Kingdom militaries have established procedures within doctrine and in practice which ensure the deployment of civilian contractors is duly considered and accounted for within the planning process. Canadian doctrine has also evolved to incorporate CANCAP for consideration and inclusion in the planning process. Where other countries have made it a regulatory requirement to consider contractor support, in Canada it is more of a guideline and practice. The United Kingdom military is the most forward thinking organization in this regard with its inclusion and embedding of contractor personnel within the headquarters and the use of computers models to support decision making and war gaming with regards to deployment and use of civilian contractors. Risk management assessment of contractor support highlights the requirement to use military resources to ensure

safety of contractor personnel if the situation requires it. Risk management doctrine also confirms that when mitigating gaps in the support of military forces, contractor support is a ready solution under the right circumstances of lower risk. In fact, given experience with the deployment of contractor support since the end of the Cold War, contractor support has evolved from being an afterthought for supporting deployed operations to being an important option and in certain circumstances, a preferred option for support as well as an established part of the force structure.

The CANCAP contract has proven to be of great value in that it meets its objectives by providing operational flexibility in support options for the Canadian military, freeing up military personnel for employment where needed, and preserving support-to-warfighting skills. It reflects strategic factors with regards to prioritizing where military personnel and resources are allocated, permitting planning of concurrent operations, and ensuring retention of key support skills that may be lost if all military support was contracted out. The decision to deploy CANCAP is considered during the OPP but there is no model in use by planners for this decision.

The AHP is a powerful decision support tool and has been used by industry and government for decision making since its inception in the 1970s. It can be used at the tactical, operational, and strategic levels and applies scientific rigour to the qualitative judgement of a group of experts on a given set of circumstances to arrive at a consistent result in setting priorities. This tool can be used in many situations, from purchasing materiel to deciding on best alternatives in a complex situation. The selection of criteria to be weighted as well as the group of experts is essential to its use and can reflect strategic issues and concerns. The Syrian example

confirmed that AHP can be a powerful tool available to military planners with regards to deciding whether or not to deploy CANCAP to support military operations.

It is evident that there are opportunities to bring decision making closer in alignment with our allies by instituting a computer-based decision making model for deploying CANCAP in support of operations. By imposing scientific rigour on the situation, better decisions can be facilitated when the model in used in conjunction with expert judgement and experience and taking the situational context into account during the OPP. Better decision making results in improved support for deployed operations as well as supporting the objectives of CANCAP. Strategic concerns such as manning of military support occupations can be incorporated into the AHP decision making model. By doing so, the model can reflect strategic issues in decisions and support better decision making for the Canadian military. It is strongly recommended that the Canadian Armed Forces consider adapting an AHP based decision making model for CANCAP decision making as part of the OPP.

Contractor support is an important part of the military force structure and environment. It is here to stay. The Cold War is over. In order to ensure that Canadian military personnel receive the best support available in a sustainable manner, the AHP decision making model should be considered for inclusion in the OPP in course of action development for determining whether or not to deploy CANCAP. It is a way in which to move forward, in supporting the Canadian Armed Forces in times of scarce resources. Our military personnel deserve no less and civilian contractors, including CANCAP, have proven they are up to the challenge.

Appendix 1 – AHP Model Results

Report of your AHP - Analysis

Goal: Decide whether or not to deploy CANCAP with Task Force. Page 1 of 9
Date: February 26, 2016

Result Summary

Alternatives Ranking:

	Name	Value
1.	Deploy CANCAP after 2nd Roto	63.90%
2.	Deploy without CANCAP	24.04%
3.	Deploy with CANCAP, 1st Roto	12.06%

Alternative-Main Criterion-Matrix:

	Host Nation Support	Manpower Availability	Risk of Casualties
Deploy	59.84%	70.07%	62.38%
Deploy with	18.93%	9.72%	11.23%
Deploy	21.23%	20.21%	26.39%

Consistency ratio: 0.05 (Critical consistency ratio: 0.1)

Main Criteria Weighting:

	Name	Value
1.	Risk of Casualties	59.36%
2.	Manpower Availability	24.93%
3.	Host Nation Support	15.71%

Alternatives Summary

Name	Description
Deploy CANCAP after 2nd Roto	Replace military support forces in theatre and provide full range of CANCAP services.
Deploy without CANCAP	CANCAP not deployed, Task Force deploys with military resources and may make use of Host Nation Support contracts.
Deploy with CANCAP, 1st Roto	CANCAP contractor personnel deployed to support Task Force with full range of CANCAP services.

Criteria Summary

1. Main Criterion: Risk of Casualties

Parent(s): -

Description:

no description available

Weighting Matrix:

	Civilian Casualties	Military Casualties
Civilian Casualties	1	0.33
Military Casualties	3.00	1

Consistency ratio: 0.00 (Critical consistency ratio: 0.1)

Result (Ranking):

	Name	Value
1.	Deploy CANCAP after 2nd Roto	62.38%
2.	Deploy without CANCAP	26.39%
3.	Deploy with CANCAP, 1st Roto	11.23%

1.1. Sub Criterion: Military Casualties

Parent(s): Risk of Casualties

Description:

no description available

Weighting Matrix:

	Deploy CANCAP after 2nd Roto	Deploy with CANCAP, 1st Roto	Deploy without CANCAP
Deploy CANCAP after 2nd Roto	1	5.00	3.00
Deploy with CANCAP, 1st Roto	0.20	1	0.33
Deploy without CANCAP	0.33	3.00	1

Consistency ratio: 0.03 (Critical consistency ratio: 0.1)

Result (Ranking):

	Name	Value
1.	Deploy CANCAP after 2nd Roto	63.70%
2.	Deploy without CANCAP	25.83%
3.	Deploy with CANCAP, 1st Roto	10.47%

1.2. Sub Criterion: Civilian Casualties

Parent(s): Risk of Casualties

Description:

"no description available"

Weighting Matrix:

	Deploy CANCAP after 2nd Roto	Deploy with CANCAP, 1st Roto	Deploy without CANCAP
Deploy CANCAP after 2nd Roto	1	3.00	3.00
Deploy with CANCAP, 1st Roto	0.33	1	0.33
Deploy without CANCAP	0.33	3.00	1

Consistency ratio: 0.12 (Critical consistency ratio: 0.1)

Result (Ranking):

	Name	Value
1.	Deploy CANCAP after 2nd Roto	58.42%
2.	Deploy without CANCAP	28.08%
3.	Deploy with CANCAP, 1st Roto	13.50%

2. Main Criterion: Manpower Availability

Parent(s): -

Description:

Military Support Trades available to support task force.

Weighting Matrix:

	Deploy CANCAP after 2nd Roto	Deploy with CANCAP, 1st Roto	Deploy without CANCAP
Deploy CANCAP after 2nd Roto	1	5.00	5.00
Deploy with CANCAP, 1st Roto	0.20	1	0.33
Deploy without CANCAP	0.20	3.00	1

Consistency ratio: 0.12 (Critical consistency ratio: 0.1)

Result (Ranking):

	Name	Value
1.	Deploy CANCAP after 2nd Roto	70.07%
2.	Deploy without CANCAP	20.21%
3.	Deploy with CANCAP, 1st Roto	9.72%

3. Main Criterion: Host Nation Support

Parent(s): -

Description:

no description available

Weighting Matrix:

	Economic Conditions	Transportation Network
Economic Conditions	1	0.33
Transportation Network	3.00	1

Consistency ratio: 0.00 (Critical consistency ratio: 0.1)

Result (Ranking):

	Name	Value
1.	Deploy CANCAP after 2nd Roto	59.84%
2.	Deploy without CANCAP	21.23%
3.	Deploy with CANCAP, 1st Roto	18.93%

3.1. Sub Criterion: Transportation Network

Parent(s): Host Nation Support

Description:

Condition of roads, rail, airports, seaports.

Weighting Matrix:

	Deploy CANCAP after 2nd Roto	Deploy with CANCAP, 1st Roto	Deploy without CANCAP
Deploy CANCAP after 2nd Roto	1	3.00	3.00
Deploy with CANCAP, 1st Roto	0.33	1	1.00
Deploy without CANCAP	0.33	1.00	1

Consistency ratio: 0.00 (Critical consistency ratio: 0.1)

Result (Ranking):

	Name	Value
1.	Deploy CANCAP after 2nd Roto	60.00%
2.	Deploy with CANCAP, 1st Roto	20.00%
3.	Deploy without CANCAP	20.00%

3.2. Sub Criterion: Economic Conditions

Parent(s): Host Nation Support

Description:

Economic conditions can support local contracting, purchasing, and support for the Task Force.

Weighting Matrix:

	Deploy CANCAP after 2nd Roto	Deploy with CANCAP, 1st Roto	Deploy without CANCAP
Deploy CANCAP after 2nd Roto	1	3.00	3.00
Deploy with CANCAP, 1st Roto	0.33	1	0.50
Deploy without CANCAP	0.33	2.00	1

Consistency ratio: 0.05 (Critical consistency ratio: 0.1)

Result (Ranking):

	Name	Value
1.	Deploy CANCAP after 2nd Roto	59.36%
2.	Deploy without CANCAP	24.93%
3.	Deploy with CANCAP, 1st Roto	15.71%

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