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DOCTRINE OR DOGMA: THE DECISION-MAKING PROCESS OF THE CONTEMPORARY OPERATING ENVIRONMENT

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ABSTRACT

The end of the Cold War in 1989 ushered in a period of instability rather than the peace that had been hoped for. In what has come to be called the contemporary operating environment (COE), non-state actors have flourished in failed and failing states. They have adopted an unconventional form of warfare that has proven to be a challenge to conventional forces; not because of their structure, but because of their ability to understand the environment within which they are operating. There has thus been a rigorous debate concerning the decision making process. Currently, the vast majority of western nations utilize an analytical process that is argued to be too linear and inflexible for the COE. It has been proposed by many analysts that a naturalistic planning process such as Systemic Operational Design (SOD) should be adopted.

Ideally, a decision making process will provide operational commanders the capacity to operate throughout the spectrum either sequentially or concurrently. It will be a tool that will provide the greatest amount of flexibility in the complex, adaptive, and dynamic environment that is the COE. If it cannot do so, it must as a minimum be functional in those areas in which it is not ideally suited. Additionally, the area in which a process is ideally suited ought to be that part of the spectrum that poses the greatest risk to a nation's survival. It is these areas that are considered in a comparative analysis of SOD and the current Canadian process called the Operational Planning Process (OPP). The analysis will show that while OPP remains the superior process, it is not without areas for improvement that could well be addressed through the adaptation of elements of SOD.

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CHAPTER ONE – INTRODUCTION

The nature of warfare has evolved throughout history. Wars have been fought by mercenaries and by proxy, by conscripts and by professional soldiers; first on behalf of their Kings and Queens, and finally on behalf of the states to which they belong as a result of the Treaty of Westphalia.[1] Over time, states came to organize themselves in terms of tax collection and control over their populations in a manner that facilitated the raising of national armies. States developed the means by which to feed and clothe their soldiers and they developed the transportation systems necessary to move them promptly in times of crisis. In so doing, states were able to raise and sustain substantial standing armies that were able to persevere against adversity and survive the decisive battle that was the hallmark of Napoléon's[2] strategy. Concurrently, technologies were developed that also altered the face of warfare in that accuracy and range of weapons necessitated dispersion, cover, and concealment.

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[1] The Treaty of Westphalia of 1648 encompasses two treaties that brought the 30 Years War to an end in Europe. The first was signed at Osnabruck on the 15th of May of the year whilst the second was signed on the 24th of October in Munster. The 30 Years War had brought the Habsburg Empire to an end and with it the balance of power was altered while concurrently the Protestant Reformation had weakened Papal Power on the continent. While there has been some debate as to the significance of this treaty, the traditional view is that it is the foundation of the concept of sovereignty and consequently the idea of nation states, who, acting together comprise the main actors in the international system as we know it today. State sovereignty arose from the principles of states retaining exclusive control of their territory and subjects within it and the notion that the internal affairs of a nation are exclusively theirs and not subject to external actors. For more information on the Treaty of Westphalia, see "Point: The Westphalia Legacy and the Modern Nation-State," *International Social Science Review*, 22 September 2005, available from http://www.encyclopedia.com/beta/doc/1G1-140744239.html; Internet accessed 9 April 2008.

[2] Born in Corsica in 1769, Napoléon Bonaparte began his military education at age nine after his family moved to France. In 1785, at the age of 16, he was commissioned into the artillery as a Second-Lieutenant. His genius marked him early on. He rose rapidly in rank, and by 1804 he was not only in command of the "Grande Armée," but he was the self appointed emperor of France as well. With both the political and military might of France in his hands, Napoléon set out to take on virtually every country in continental Europe in a string of successful campaigns. He dominated the continent for a decade. His decline began in 1812 after a disastrous campaign in Russia left his armée weakened. It ended in 1815 with defeat at the hands of the British at Waterloo. His myriad of successes as a commander, and the reforms he made within his armée to enable those successes, were of such significance that they continue to be studied at military academies around the world. For more on Napoléon see Richard Moore, "Napoléon Bonaparte," *Napoleonguide.com*, available from http://www.napoleonguide.com/leaders_napoleon.htm; Internet; accessed 18 April 2008.

The size of national armies, and the modern weapons they employed, had taken from commanders the ability to maintain the situational awareness necessary to control battle. To counter the effect of modern weaponry, commanders were forced to disperse armies into smaller tactical groupings. For commanders, the challenge became one of determining how to ensure unity of purpose which was derived from the commander's plan. French Colonel Ardant du Picq[3] observed that while a large number of troops at a distance but "without cohesion may be impressive," they are really only as effective as perhaps "fifty or twenty-five percent" of their number once they have closed with the enemy.[4] How could these soldiers be led to en

an army comprised of regiments. These reforms were adopted by peer competitors as "armies that fight each other tend to resemble one another."[6] The Prussians went one step further in a development that would be emulated by others. They professionalized their officer corps through the establishment of military schools and colleges. They also developed general staffs to assist commanders with the control of their forces.[7] Force structures, equipment, and staff training have continued to evolve since Napoléon and the Prussians. Their basic premise has withstood the test of time in a number of small wars, both world wars, Korea, and the multiple skirmishes of the Cold War. Since the end of the Cold War, however, the nature of warfare has changed such that the unconventional battle[8] is more prevalent than the conventional one.

In our unipolar world, dominated by the United States, some states and non-state actors (NSA) have resorted to unconventional warfare. By focusing their attacks on the weak points of a conventional foe, the weak adversary is able to achieve success.[9]

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[6] J.A. Lynn, "The Evolution of Army Style in the Modern West, 800-2000," *The International History Review 28.3* (August 1996): 509.

[7] Holger Herwig, "The Prussian Model and Military Planning Today," *Joint Force Quarterly*, no. 18 (Spring 1998): 67 – 75. Available from; http://www.dtic.mil/doctrine/jel/jfq_pubs/1418.pdf; Internet accessed 15 March 2008, 69.

[8] Conventional battles are conducted by a minimum of two states, using uniformed soldiers, following established rules of war within a defined battle space. States typically go to war to pursue national interests. They have a monopoly on the tools of war. Their armies are conventional in that they are similarly equipped, structured and trained and they fight each other. While it has not been the case since the Second World War, in the past wars commenced after a formal declaration and ended with some form of a peace treaty. The rules developed to govern conventional warfare have come to be called the Laws of Armed Conflict; one of the main components was a differentiation between combatants and non-combatants. Unconventional warfare on the other hand is fought in pursuit of political objectives of groups either within or without states. They are fought in states in which the monopoly over the tools of war has been lost. The distinction between war and peace becomes blurred. There is no clear distinction between combatants and non-combatants. There is no front line. The battlefield is therefore not really a geographic one.

[9] Robert Scales, *Yellow Smoke*, (Lanham: Rowman and Littelfield Publishers Inc, 2002): 42.

Whether these weak adversaries are called insurgents,[10] terrorists,[11] or even guerillas[12] matters not. Ultimately, each group employs elements of the same tactics. They survive by operating from those areas that are beyond the security perimeter of a conventional force, or within the urban sprawl that is the hub of modern society. In cities and towns, they blend with the population in what amounts to an unassailable base. Conventional forces have previously fought successfully in this environment. In the Second World War, laying siege to a city and destroying vast portions of it to kill the enemy was a necessary and acceptable means of achieving success, despite the collateral damage inflicted on infrastructure and innocent civilians. That was total war.[13] In contrast, modern conflicts are more surgical.[14] To defeat the enemy in urban areas today, forces must be able to kill or otherwise neutralize their adversaries without causing collateral damage.

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[10] An insurgent is "a person who rises in revolt against civil authority or an established government; one who openly and actively resists the execution of laws; a rebel." From: Dictionary.com, *Webster's Revised Unabridged Dictionary*, Dictionary.com, s.v. "insurgent," available from http://dictionary.reference.com/browse/insurgent; internet accessed 9 April 2008.

[11] A terrorist is "a person who uses violence and intimidation in an attempt to achieve political aims." From *Pocket Oxford English Dictionary*. 9th ed., s.v. "terrorist." The terror they practice is not limited to security forces, rather it is targeted at any and all individuals and groups (military, police, and civilian) that will enable goal achievement.

[12] A guerilla is "a member of a small independent group fighting against…" conventional forces. From *Pocket Oxford English Dictionary*. 9th ed., s.v. "guerilla." Guerilla's are different than terrorists in that they work in formed groups under the command of a recognized leader, carry arms openly (though they generally employ hit and run tactics), and they wear either a uniform or some other distinctive symbol. These four criteria make them subject to the same protections afforded a combatant under the Laws of Armed Conflict.

[13] "Total War." Encyclopedia Britannica. 2008. Encyclopedia Britannica Online. Available from http://www.britannica.com/eb/article-9073016; Internet; accessed 23 February 2008.

[14] Lieutenant Colonel Myers, "Applying Operational Manoeuvre Theory to Contemporary Operations," (Toronto: Canadian Forces College Advanced Military Studies Programme Paper, 2006), 18/37.

The conventional capability provides tactical and strategic mobility, protection, and precision weapons, but is now challenged by the second and third order effects resultant of their actions, particularly along the physical plane. [15] Today's political climate does not allow for anything other than ultra-precision.[16] There is no tolerance for collateral damage.[17] It is necessary; therefore, to rethink the manner in which the problem of the adversary, in what has come to be called the contemporary operating environment (COE), is dealt with.

Defining the problem is the first step in the execution of the process that ultimately will lead to the development of a plan to deal with it. The challenge is that conventional forces have developed analytical decision making processes that have been designed to defeat known enemies operating within familiar environments. The problems posed by these singular, or even multiple, actors were fairly straight forward. Critics have described the decision making processes used to counter these problems as linearly

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[15] Second order effects are those that are caused by reaction and counter-action to an initial action by the party against whom the initial action was aimed. Their actions in turn generate reactions by other parties which are third order effects, and so on. So, we "must examine potential consequences or effects of our actions, as well as those resulting from enemy actions and reactions." Michael Miller, "Thinking About Second and Third Order Effects: A Sample (and Simple) Methodology," *Iosphere Joint Information Operation Center*, Summer 2006, 36. Available from http://www.maxwell.af.mil/info-ops/iosphere/iosphere_summer06_miller.pdf; accessed 9 April 2008.

[16] Major General Anthony Stone, "Future Imperfect," RUSI Journal no. 144 (3) (June 1999): 54 – 59. Available from

structured and rigid; which they say are not suitable to deal with an enemy that operates in the unfamiliar environment of the COE.[18]

In the COE, there are simply too many actors. Their relations with one another, whether direct or indirect, cause a complex, adaptive, and dynamic interplay of cause and effect. In this environment, therefore, commanders and their staffs must understand that their actions will affect more than just their adversary. Their actions will have an effect on the adversary's supporters who provide unconventional adversaries with the security and provisions necessary to conduct their operations. Their actions will affect those members of the population who are neutral; neither supporting the adversary, the legitimate government, or the intervening force. Similarly host nation governments and their security forces, non governmental organizations (NGO), neighbouring countries within the region, ethnically and culturally diverse populations, religious groups, and others will all feel the effects of actions taken against an adversary. The aforementioned

[18] Matthew Lauder, "Systemic Operational Design: Freeing Operational Planning from the shackles of Linearity," Draft, Spring 2008, 1.

groups are, in effect, a system; a system that itself is part of a larger regional or global system. The adversary in the COE can be said to exist within a system of systems.[19]

As a result of the system of systems construct of the COE, the operational and tactical problems encountered within the COE are far more complex than those that prevailed within conventional constructs. Actions against an adversary in the COE generate effects that are said to be difficult to conceive of by linear thinking staffs and commanders. An inability to define the problem posed by an adversary will lead to an inability to take the appropriate corrective or coercive action. Where inappropriate action is undertaken the effect generated could serve to perpetuate the problem. The question, therefore, is whether or not analytical decision making is sufficient to the problems of the COE?

The Canadian Forces employs the Operational Planning Process (OPP). It is a command led and staff driven analytical process that has been designed to facilitate the translation of strategic goals into operational objectives.[20] This is accomplished by a

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[19] Where one organization is linked through some commonality to one or more organizations, they can be said to belong to a system. Each of those organizations will inevitably have links with other organizations, or systems, thus some systems can be said to be linked to other systems. As the linkages of one system to another multiply, a complex system evolves that itself can belong within another system. If an incident occurs that changes one organization, in any of the systems, its effects may be translated to other organizations to which it is linked (i.e. within its system), and onwards through to other systems. This construct leads to descriptions of the battle space in the COE as complex, dynamic, and adaptive. A more technical description of a system of systems follows from David Carney, David Fisher, and Patrick Place, "Topics of Interoperability: System of Systems Evolution," *Software Engineering Institute*, Technical Note – CMU/SEI-2005-TN-002, (Pittsburg: Carnegie Mellon University, June 2005), 3. http://www.sei.cmu.edu/pub/documents/05.reports/pdf/05tn002.pdf; Internet; accessed 18 April 2008. "Any construct that we label "a system" may in fact be composed of several constituent systems, and this may recursively be true at several levels. In other words, anything that at one level we can call a "system" may actually internally be a "system of systems," and any "system of systems" may itself be part of some larger "system of {systems of systems}," and so forth."

[20] Canadian Forces College, "Combined and Joint Staff Officer's Handbook," AL4-2005-10-28. (Toronto: CFC, 2005), II-1-3/16.

commander providing his staff the requisite information to generate multiple courses of action (COA) that are ultimately compared against one another to select the best solution to the problem. A plan of action is developed from the selected COA.

The OPP is also employed by NATO. The United States Army and Australia use similar methods called the Military Decision Making Process (MDMP), and the Joint Military Appreciation Process (JMAP) respectively. Critics of OPP argue the process is problematic for a number of reasons. First, they see it as limited in its scope to account for the employment of the full range of capabilities necessary to be effective in the COE. In other words it is suitable for the high and medium levels of conflict against peer competitors, but not for conflict against unconventional adversaries at the low end of the spectrum of conflict.[21] As such, critics of OPP argue that a method supportive of decision making within this environment must be adopted if success is to be achieved in the COE. One such method is the Systemic Operational Design (SOD) theory developed in Israel by Brigadier General (retired) Shimon Naveh.

Shimon Naveh is formerly of the Israeli Defence Force. In his last post he was the co-director of Israel's Operational Theory Research Institute (OTRI), a position he held until 2006. Naveh has argued that the most effective way in which to deal with the complex, dynamic, and adaptive adversary within the COE is to use an approach that views the multiple actors within the COE as the component parts of a system. He developed SOD which "is an operational planning method that supports naturalistic

[21] The spectrum of conflict ranges from absolute peace to crisis and war. It involves terrorists, guerillas, criminals, and conventional armies. A balanced military must be able to operate throughout the spectrum in the execution of a multitude of tasks ranging from high intensity combat operations to complex peace support and stabilization missions to low intensity operations such as humanitarian assistance missions, traditional peacekeeping and observer operations.

decision-making through the use of discourse, iteration, knowledge, expertise, experience, and intuition."[22] It is argued to be more effective in the COE as it is less structured and less time consuming than analytical processes like OPP.[23] It is argued to remove the constraints on staffs and provide them with similar flexibility to that of their adversaries in the COE. Unfortunately, there is little in the way of practical example to substantiate the effectiveness of SOD in the asymmetric battle and its utility across the rest of the spectrum of conflict is not well considered.

In the COE conflict may be prosecuted across the entire spectrum. At the moment, however, operations tend to be at the lower end of the spectrum. It behooves analysts to find the means to ensure that they do not become victims of their experience; they must not forget the impact of the rest of the spectrum. They must strike the balance between flexibility and rigid adherence to time tested principles as the impact of rash decisions are often measured in blood. Adopting a decision making methodology that may be too complex for anything but operations on the low end of the spectrum of conflict could be problematic.

Ideally, a decision making process will provide operational commanders the capacity to operate throughout the spectrum either sequentially or concurrently. It will be a tool that will provide the greatest amount of flexibility in the complex, adaptive, and dynamic environment that is the COE. If it cannot do so, it must as a minimum be functional in those areas in which it is not ideally suited. Additionally, the area in which a process is ideally suited ought to be that part of the spectrum that poses the greatest risk

[22] Matthew Lauder, "Systemic Operational Design: Freeing…," 2.

[23] *Ibid*.

to a nation's survival. These are the areas that must be explored whilst selecting an appropriate decision making process and it is in these areas in which the OPP is superior to SOD.

Where, OPP has worked and continues to work in the conventional fight and is working in the COE, SOD has not been proven in either of the two areas. [24] The intent of this paper, therefore, is to comparatively analysis SOD and OPP in order to demonstrate the utility of OPP across the spectrum of conflict. The analysis will demonstrate, however, that elements of SOD ought to be incorporated into OPP to optimize its utility. To accomplish that aim, I will first define the COE and the spectrum of conflict found within it. Next I will outline the OPP and SOD, highlighting strengths and weaknesses. Finally, I will conduct the analysis.

[24] Whether OPP works in the unconventional or conventional fight is debatable as there is no alternative against which to compare it in terms of success.

CHAPTER 2 – THE CONTEMPORARY OPERATING ENVIRONMENT

> *I had no sense that it was war. I surely didn't think that it was war. I had no understanding that we would be as aggressive as we have been. Of course, our soldiers have to have the capacity to defend themselves, but I didn't think it was going to be combat all the time. It was not presented to me as a counterinsurgency operation. Our purpose was reconstruction.*[25]
>
> - Paul Martin, Former Prime Minister of Canada

Prior to 1945 wars were primarily state versus state and undertaken based upon a rational decision made in the full knowledge that you were either going to win or lose. It was a "normal way of conducting disputes between political groups,"[26] and it tended to be "the exclusive preserve of nation-states, which conferred the monopoly over armed violence on armies or fleets that were carefully controlled, wore uniforms and carried weapons that were clear for all to see."[27] This ideal was borne of the 1648 Treaty of Westphalia that ended the 30 Years War and that formed the basis of the Laws of Armed Conflict (LOAC) that continue to govern warfare today.[28] Since 1945, and even more so, since the end of the Cold War in 1989, the state versus state nature of warfare has been

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[25] Former Canadian Prime Minister Paul Martin reflecting on Canada's role that he had committed it to in Kandahar as quoted in Janice Gross Stein and Eugene Lang, *The Unexpected War: Canada in Kandahar,* (Toronto: Viking, 2007), 210.

[26] Micheal Howard, *The Causes of War*, (Cambridge: Harvard University Press, 1984), 7.

[27] Raufer, "New World Disorder, New Terrorisms: New Threats for Europe and the Western World," *Terrorism and Political Violence,* 11 (4) (Winter 1999): 45.

[28] The Law of Armed Conflict (LOAC) is that body of international law that articulates rules of behaviour for parties to an armed conflict. It is designed to limit unnecessary suffering, ensure respect for human dignity, and to facilitate the eventual restoration of peace. The laws are embodied within the Geneva Conventions and are formally agreed to on a case by case basis by nation states. Often signatories stipulate caveats on elements of particular laws. Where a nation state has not signed one or more of the conventions, they could still be considered liable for their implementation due to Customary International Law (CIL). Principles seen to bind states similar to a law articulated in a treaty, are considered to be CIL. These principles must be commonly accepted and informally adopted. They must be applied uniformly, and consistently, and they must be similarly repeated by other states. For more on LOAC and CIL see Office of the Judge Advocate General, B-GG-005-027/AF-021 *The Law of Armed Conflict at the Operational and Tactical Level*, (Ottawa: DND, 2001), 1-2.

altered in many cases to a state versus NSA situation.[29] This fundamental change of opponents has necessitated an essential shift in the manner in which warfare is waged by states. The environment is far more complex. It is one in which militaries find themselves operating against an enemy that "has proven to be an adaptive, thinking, wily animal."[30] Against this "wily" opponent, militaries will have to operate more on the psychological than the physical plane, a task for which a greater degree of mental agility will be required as it is opposite to what a conventional state versus state campaign requires. To understand whether the OPP is suitable to design major operations and campaigns in this environment, it is first necessary to understand the evolution of the COE, the nature of the adversary, and the suitability of conventional forces acting within it.

The Evolution of the Contemporary Operating Environment

While the First World War marked the beginning of the end of a period during which empires ruled over vast portions of the world, plundering the resources of their colonies in pursuit of their mercantile policies; the Second World War ended it. With the demise of empires, diverse nations began to look to self-rule rather than to remain in what were arbitrarily created states that cared not for religion or culture, but for boundaries that defined an empire's expanse or that incorporated key resources. These were not states that encompassed people with commonalities that would cause within them a desire to form a state. Conflicts inevitably grew from aspirations of self-rule, both as a state and then as individual nations from within that state. Indeed, "from 1945 to 1990, there were

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[29] Lieutenant Colonel Myers, "Applying Operational Manoeuvre Theory…," 14/37.

[30] Brigadier Lamont Kirkland, "Future Challenges for Land Forces: A Personal Review," *British Army Review*, no. 142 (Summer 2007), 10.

approximately 75 important conflicts: 28 following the classic rules … [of conventional warfare] and 46 insurrections, and serious civil wars."[31] The end result of the latter category has been the genesis of a number of failed or failing states – states that have for all intents and purposes, lost the monopoly on the conduct and control of armed violence.[32]

The end of the Cold War in 1989 sparked an even greater number of nations to rise up into conflict. The end of the East versus West (communism versus democracy) ideological conflict saw the end of support for failing and failed states in which proxy wars were conducted and ideological influences were essentially purchased by one side or the other.[33] The sudden withdrawal of major support drove failing states into further despair, causing an even greater loss of control over the use of armed violence.

Who Do We Fight in the Contemporary Operating Environment?

> *No longer are we fighting the traditional enemy like the Russian bear. The threat now is a ball of snakes that sometimes manifests itself as a smaller portion of the high-intensity warfare but also spans the spectrum right through terrorism, organized crime and proliferation of weapons of mass destruction*.[34]

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[31] Raufer, "New World Disorder…," 41.

[32] Herbert Wulf, "The Bumpy Road to Re-establish a Monopoly of Violence," *Paper prepared for the Study Group on Europe's Security Capabilities, London School of Economics and Political Science*. Available from http://www.lse.ac.uk/Depts/global/Publications/HumanSecurityReport/Wulfdraft.pdf; Internet; accessed 23 February 2008, 2.

[33] "Guerilla Warfare: The Cold War Period." Encyclopedia Britannica. 2008. Encyclopedia Britannica Online. Available from http://www.britannica.com/eb/article-256403/guerrilla-warfare; Internet; accessed 23 February 2008.

[34] General Hillier was reported to have made this statement during a speech to the Canadian Conference of Defence Associations conference in Ottawa held 3 & 4 March 2005 by Adam Day in "Budget, Missile Defence Dominate Conference." *Legion Magazine* (May/June 2005). Journal on-line; available from http://www.legionmagazine.com/features/militarymatters/05-05.asp#3; Internet; accessed 13 February 2008.

Within the boundaries of failing states, NSA have flourished – whether they are of domestic or international origin. There, they have been able to secure safe areas in which to train and operate. They are able to engage in smuggling and drug trafficking to raise the funds necessary to obtain weapons and ultimately execute their operations. Given the outward signs of sovereignty retained by failing states, NSA have been able to obtain legitimate passports and other documentation from them.[35] Technology has helped them to do so on a global scale, as they use "the existing global economic, transportation, and communications systems to organize and manage" their affairs.[36] For example, NSA use cell phones and email as their means of communication.[37] They use couriers to smuggle cash, airplane tickets, and fake, stolen, or legitimate passports to distant members of their network.[38] Unlike the wars of state versus state, wars with NSA do not "begin with conscious and reasoned decisions based on the calculation, made by *both* parties, that they can achieve more by going to war than by remaining at peace."[39] Moreover, NSA do not abide by the LOAC. They cannot be controlled by the international community through sanctions or other diplomatic leverages. They cannot be negotiated with, they don't sue for peace, and they certainly don't surrender.

Some states have lost their monopoly on the application of armed violence. They have come to provide safe havens and bases of operations for NSA and they have

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[35] R. Takeyh, & Gvosdev, N, "Do Terrorist Networks Need a Home," *The Washington Quarterly*, no. 25 (3) (Summer 2002): 98-101.

[36] *Ibid*., 97.

[37] *Ibid.*

[38] *Ibid.*

[39] Howard, *The Causes of War*, 22.

provided legitimate documentation that has enabled these organizations to gain entry into, and conduct business within, other states. Technology has enabled them to manage and coordinate their efforts around the world and has even provided the means by which to unite their efforts with people of similar beliefs.

Does this, however, mean that wars are fought for reasons that differ from those of the pre-1945 era? On the surface it would seem so. States have traditionally gone to war for reasons ranging from the acquisition of greater military positional strength, to the acquisition of territory and thus resources.[40] NSA, on the other hand, have gone to war against states for reasons ranging from the desire for the right to self-government, to the expression of religious or ideological ideals. Whatever the reason, it would seem that each holds one element in common; that is that their principle aim (indeed the principle aim of war) is power.[41] The power to control one's destiny, the power to shape the environment within which one lives, the power to influence, change, or crush the beliefs of others. What has changed, therefore, is not why wars are started today, but by whom they are started and how they are fought. How does a state fight an individual or a group that has declared war upon it such as the case of Osama bin Laden and Al Qaeda against the United States? How does a state fight a war against a tactic, such as the "war against terrorism?"[42] These are the questions with which states need to wrestle. These are the questions that confound 360 years of Westphalian derived rules (rules that govern the

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[40] John Vasquez, "Distinguishing Rivals That Go to War from Those That Do Not: A Quantitative Comparative Case Study of the Two Paths to War," *International Studies Quarterly* 40, no. 4 (December 1996): 558. Available from http://www.jstor.org/stable/view/2600890?seq=26; Internet; Accessed 20 April 2008.

[41] Howard, *The Causes of War*, 16.

[42] Terrorism is a tactic. It is not an entity. It used by groups with a political grievances, hence it is the grievance that must be addressed rather than the tactic if success is to be achieved.

conduct of warfare, for which they would seem inadequate) given its current nature. These are the questions that have lead states to ponder whether or not their conventional forces can be successful in the COE.

Conventional Forces in the Contemporary Operating Environment

As conventional forces continue to gain a better understanding of the conduct of operations in the COE, they are faced with a dichotomy of conditions in the potentially non-contiguous, non-linear, expanded battle space. On the one hand, they are faced with an increasing focus on operations in urban environments, while on the other, the area of operations in which these urban centers lie have been expanded. In the urban environment, physical construction canalizes movement, separates forces, reduces lines of sight, decreases detectability, and forces soldiers to fight in three dimensions.[43] Structures of cultural or religious significance and in-place populations impact the conduct of operations, thus increasing the requirement for precision effects on the enemy while minimizing collateral damage. The density of information in this environment will cause collection assets from multiple levels of command to overlap in search of critical information requirements to satisfy their individual commanders.

While much focus has been put on improving capabilities to operate in urban environments, there remains a continuing need to dominate rural areas between these population centres, through which lines of communications must flow. In the rural area, the expanse of land coupled with limited resources available to effect security, have made

[43] Fighting in three dimensions within an urban environment simply means that battle can be conducted in three areas. The first is below the surface in sewers or interconnected pedestrian walkways. The second is on the surface. The third dimension is from the air, both with aerial vehicles, or by using the elevation afforded defenders firing down upon an attacking force from rooftops or windows. This environment poses a huge challenge to soldiers given the densely packed areas in which all three relatively interconnected dimensions exist.

for favourable insurgent operating conditions. There, as in the urban environment, the weaker insurgent adversary is able to employ asymmetric[44] tactics to gain an advantage over the superior conventional opponent.

Are Conventional Armies Suited to the Unconventional Conflict?

In combating NSA, conventional armies have had to adapt their tactics and, in many cases, undertake operations more akin to those of police forces. But does that necessarily mean that conventional war is a thing of the past? I would argue not. It has been repeatedly demonstrated in Afghanistan, Iraq, and Lebanon that NSA are capable of mounting conventional attacks (e.g. the Taliban/Al Qaeda defensive posture adopted in Panjwaii, Afghanistan in the summer of 2006 against Canadian forces,[45] or the manner in which Hezbollah fought against Israel during their war in Lebanon in the summer of 2006).[46] While these examples do not constitute a conventional war, they certainly demonstrate that armies must retain a conventional capacity; a capacity that will enable it to operate across the spectrum of conflict.

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[44] Asymmetric tactics are typically employed by a weaker adversary to bring his strengths to bear against a stronger opponent's weakness. Practitioners of asymmetric warfare employ "innovative, nontraditional tactics, weapons, or technologies … at all levels of warfare—strategic, operational, and tactical—and across the spectrum of military operations." *Joint Strategy Review* 1999, Washington, DC: The Joint Staff, 1999, p. 2 as quoted in Steven Metz and Douglas Johnson II, "Asymmetry and U.S. Military Strategy: Definition, Background, and Strategic Concepts," (Carlisle: U.S. Army War College Strategic Studies Institute Monograph, January 2001), 5. http://www.au.af.mil/au/awc/awcgate/ssi/asymetry.pdf; Internet; Accessed 18 April 2008.

[45] Janice Gross Stein and Eugene Lang, *The Unexpected War: Canada in Kandahar*, (Toronto: Viking, 2007), 219.

[46] Matt Matthews, "We Were Caught Unprepared: The 2006 Hezbollah-Israeli War," *The Long War Series - Occasional Paper 26 of the U.S. Army Combined Arms Centre,* (Leavenworth: Combat Studies Institute Press, 2008). Available from http://usacac.army.mil/CAC/csi/RandP/CSIpubs.asp#LongWar; accessed 17 March 2008, 2.

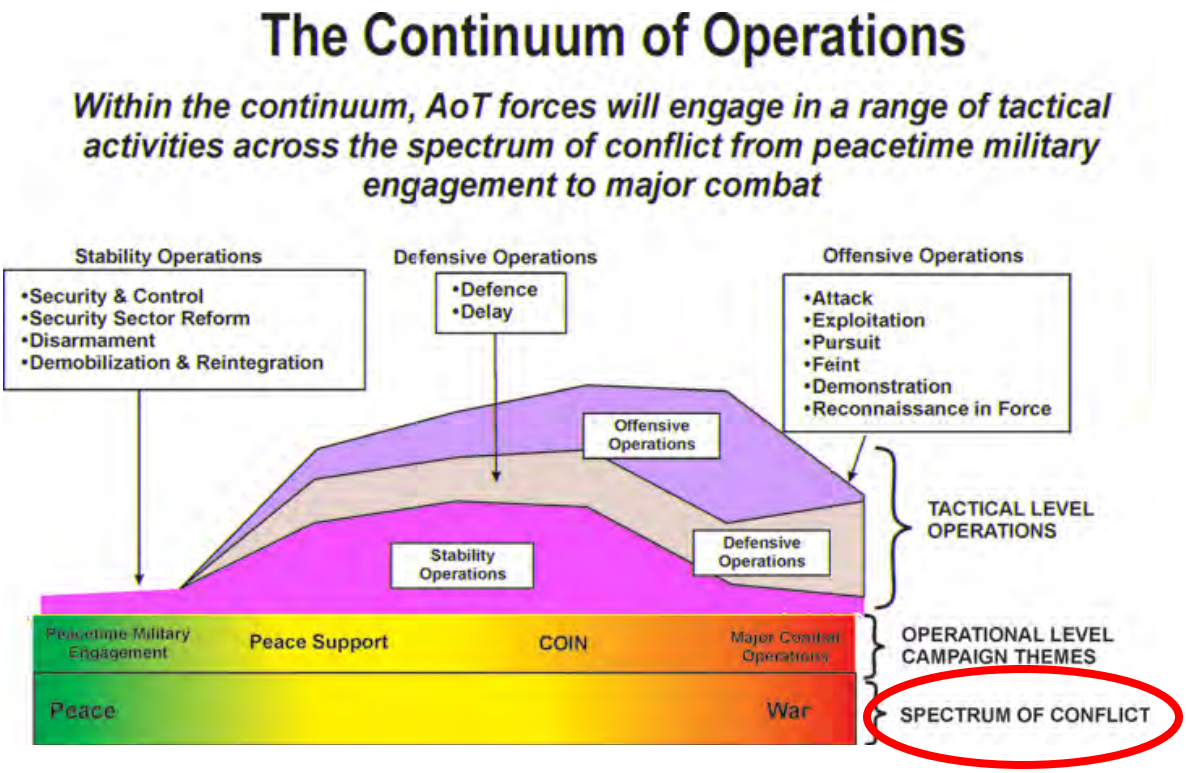

Figure 1 – The spectrum of Conflict within the Continuum of Operations[47]

Figure 1 depicts the relative weight of effort a conventional force must exert in three key operations (stability, offensive, and defensive) in relation to the spectrum of conflict.[48] The spectrum of conflict is a range of operations from the low end of peacetime military engagement through to the high end of major combat operations.[49] At the low to mid level of the spectrum resides the unconventional fight, whereas the conventional nature of conflict tends to occur at the mid to high end of the spectrum. The range of activity across the spectrum requires forces that are ready and able to operate both conventionally and unconventionally "in dynamic and complex environments in

[47] Canada, Department of National Defence, DB-GL-310-001/AG-001 *Land Operations 2021: The Force Employment Concept for Canada's Army of Tomorrow*, (Ottawa: DND Canada, 2007), 7.

[48] *Ibid*.

[49] *Ibid*.

which tactical objectives are intrinsically linked to longer-term political objectives that may in turn be influenced by domestic and international media and public perceptions."[50] Commanders will need to be able to understand the complexity of the problems they will face and to devise innovative solutions to deal with them.[51]

It is the conventional capacity of a military that enables a state to project its power globally.[52] To defeat insurgents on their turf rather than on our own is clearly the preferred option. Conventional forces have the logistical and administrative capacity to undertake prolonged missions and they have the protection to defend themselves from both the unconventional and conventional threat. I wonder what Iran would have done to the coalition in Iraq had it been structured less for conventional battle and more for unconventional battle? It would have been an ideally exploitable situation for a regime opposed to the ideologies of the United States.

There is also the question of the balance of power. Western states have kept the peace since the end of the Second World War. Would that peace have been as easily maintained had it not been for the balance of power that exists amongst them? Were one of those states to weaken its conventional capacity, it would only serve to render it susceptible to the ambitious desires of another state. Even the neutral Swiss have a highly capable, well-equipped and trained military. The weak are vulnerable. In an age when the demand for resources and riches continues to grow astronomically, no state can

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[50] Canada, Department of National Defence, DB-GL-310-001/AG-001 *Land Operations*..., 7.

[51] *Ibid.*

[52] Lawrence Meade, "Anglo Primacy at the End of History: The Deep Roots of Power" (a John Bonython Lecture, Centre for Independent Studies Sydney, Australia, 27 June 2007 and Auckland, New Zealand, 28 June 2007). Available from http://www.cis.org.au/events/jbl/jbl_mead_07.pdf; Internet; Accessed 18 April 2008.

afford to be weak – not in the face of unconventional assault nor in the case of the conventional threat.

Conventional armies and their technologically advanced weapon systems, particularly those that are protected by armour, will not be "assigned to the scrap-heap" as suggested by Van Creveld in his book entitle *The Transformation of War.*[53] The protective characteristics of these systems are precisely what enable forces to operate within the hostile confines of the urban sprawl within which insurgents seek cover. It is the ability to withstand the first hit, often the very means by which the force becomes aware of the insurgent presence that allows these forces to operate. While it is not ideal that they be reactive, the reality of the situation is that intelligence will only provide so much of a warning and then on only a small percentage of the considerable threats posed by insurgents. Intelligence generally does not provide the precise location from which an attack will be undertaken, nor does it provide the whereabouts of those that would effect that action; at least not in the vast majority of cases. Thus, soldiers must be able to take the first hit or they simply will not venture into those areas; an act of omission that would provide insurgents with free reign while limiting the coercive power of the force there to effect change on behalf of the state that projected it.

Conventional armies provide assurances of security versus other states, particularly when they are projected into a region that is more or less unanimous in its opposition to the state from which they came, such as is the case with the United States and its Allies in the Middle East. Their structures enable their projection. Their weapons and defensive systems enable them to absorb the first strike from insurgents so as to

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[53] Martin Van Creveld, *The Transformation of War,* (New York: The Free Press, 1991).

ensure that their actions are reactive and precise as opposed to the shoot first strategy. Conventional capacity ensures that the balance of power is retained between states and does not therefore invite the ambitious desires of another state. In other words, conventional war may well be stalemated, but it lurks not far below the surface of international relations and the armies that are designed to fight them are best suited to undertake unconventional operations, albeit with tactics adapted to that task.

Implications of the Contemporary Operating Environment

Unconventional adversaries seek shelter through their ability to remain indistinguishable from the local population. They adapt their tactics to the environment and are not constrained by morality or by the conventions and protocols that together comprise the LOAC. They evolve their methods along the continuum of combat that ranges from the criminal to insurgent, to terrorist and guerilla. Their efforts are coordinated at the cellular level enabling dispersed and simultaneous operations. The mechanisms by which they effect their operations are so simple as to render conventional high-tech capabilities ineffective. The dispersed nature of their organization and the complex environment within which they operate necessitate that soldiers undertake multiple, simultaneous, distinct, and dispersed operations at all levels of command and in plain view of the omnipresent 24/7 media.

Combating an adversary in the COE is more about defeating his will on the psychological plane than his capabilities within the physical plane. It entails influence operations to alter the will and perceptions of the adversary and his supporters, be they local, regional, or international. The will of the people is the vital ground, and winning the support of the people is the key to success in a struggle that by its very nature will be

long.[54] It is clear therefore that the military cannot operate alone.[55] It must work in concert with the full range of organizations and departments that are represented by the whole of government.[56] It is complex work undertaken in an environment populated by multiple actors, with multiple agendas, each affecting the other in some difficult to measure way. The inputs into the decision making process, the means by which they are assessed, and the knowledge necessary to determine the effects of one upon the other, versus the effects undertaken by militaries in concert with their whole of government partners are critical requirements in the COE. The decision making process employed within the COE must, therefore, be capable of incorporating multiple non military inputs to be successful. The following two chapters will consider this, and the other considerations thus far highlighted as necessary conditions for operating in the COE.

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[54] John Nagl, *Learning to Eat Soup With a Knife,* (Chicago: The University of Chicago Press, 2002), 196.

[55] Richard Stubbs, *Hearts and Minds in Guerilla Warfare: The Malayan Emergency 1948 – 1960*, (Oxford New York: Oxford University Press, 1989), 259.

[56] The Whole of Government Approach applies the full capacity of all elements of the Canadian Government to the resolution of problems in areas of conflict. This is as a result of the nature of the COE. The military will not be left alone to deal with conflict. It will require the "right mix of military capability to ensure it can carry out all potential tasks related to defence, diplomacy and development….by establishing stable and secure environments, providing essential services to the local population, promoting good governance by local authorities, and contributing to the economic development of the region." Canada, Department of National Defence, DB-GL-310-001/AG-001 *Land Operations 2021: The Force Employment Concept for Canada's Army of Tomorrow*, (Ottawa: DND Canada, 2007), 30.

CHAPTER 3 – THE OPERATIONAL PLANNING PROCESS (OPP)

The nature of the COE is such that information will either be limited or of such quantity as to render its synthesis into intelligence to be irrelevant due to time constraints. Time will also be a factor as it pertains to attempts to get within an adversary's decision action cycle.[57] The limited availability of resources will also define which actions are feasible. The intent of this chapter is to introduce OPP and to highlight its strengths and weakness as a decision making tool within the COE in preparation for a comparative analysis against SOD in Chapter 4.

The Operational Planning Process in Review

The purpose of OPP is "to optimize logical, analytical steps of decision making in conditions of uncertainty and ambiguity."[58] It applies both to deliberate and crisis action planning and it is used at the tactical through to the strategic level. It is used in operational design and for the development of plans to effect that design. OPP is based upon the NATO Guidance for Operational Planning (GOP)[59] and is similar to the

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[57] The decision action cycle is one that has evolved from Colonel John Boyd's OODA Loop. Colonel Boyd was a successful United States Air force pilot whose experience in aerial combat in Vietnam lead him to coin the term. OODA is an acronym for Observe, Orient, Decide, and Act. It is a loop because it is a continuous cycle that fighter pilots engaged in aerial combat go through during an engagement. They first observe an enemy, orient themselves to be in a position to attack, decide how they will attack their enemy and finally act on that decision. As each action taken by one pilot generates a counter-action by the other, the cycle is continuous until one of the pilots gets inside the other's OODA Loop and gains a position of superiority. The decision action cycle is similar, in that it forces an adversary into a reactionary mode and ultimately makes him unable to content with the tempo of a friendly force.

[58] Department of National Defence, B-GJ-005-500/FP-000 *CF Operational Planning Process,* (Ottawa: DND Canada, 2002), 3-1.

[59] NATO's Guidance on Operational Planning (GOP) details the exact same five steps of OPP as are employed by Canada. There are no differences in the process. For more details see "Guidelines for Operational Planning (GOP)," Final Revision 1, J5 Plans/7630-058/05-105603, (Belgium: Supreme Headquarters Allied Powers Europe, June 2005). See Appendix 1 for comparisons to the MDMP and the JMAP.

MDMP[60] employed by the United States Army, and to the JMAP[61] employed by Australia. It is a process that unites a commander and his staff in the analysis of a mission in terms of the environment (both physical and political) within which it will be undertaken, and the nature of the tasks assigned within that mission. It involves a process for the development of multiple courses of action (COA) to undertake an assigned mission and it involves a process of comparative analysis to select and refine that COA deemed most effective. Finally, it is structured to develop the selected COA into a plan and ultimately the operations order that articulates plan requirements to subordinate units and formations.

OPP consists of five stages: initiation, orientation, course of action development, plan development, and plan review. The first stage is triggered by an initiating directive which may be received in many forms ranging from a "planning directive, [to] planning guidance, a warning order, a strategic directive, or under time constraints … a verbal

[60] The United States Army's MDMP consists of seven steps that correlate to the NATO OPP and the Canadian OPP as illustrated in the chart at Appendix 1. The seven steps are: Step 1 - Receipt of Mission which is equivalent to OPP Stage 1 – Initiation. Step 2 - Mission Analysis is equivalent to OPP Stage 2 – Orientation. Step 3 – COA Development, Step 4 – COA Analysis, Step 5 – COA Comparison, and Step 6 – COA Approval are all encapsulated in OPP Stage 3 – COA Development. Step 7 – Orders Production is equivalent to OPP Stage 4 – Plan Development. What the MDMP does not speak of is the OPP Stage 5 – Plan Review. This step is completed, but is not a part of the formal process. Like the OPP and JMAP, the MDMP incorporates Joint Intelligence of the Battlefield (JIPB) throughout the process as an integral component. For more information see USA, The United States Army, Field Manual 5-0, Army Planning and Orders Production, 20 January 2005.

[61] The Australian Joint Military Appreciation Process consists of four steps that correlate to the NATO OPP and Canadian OPP as illustrated in the chart at Appendix 1. The four steps are: Step 1 – Mission Analysis is the equivalent of OPP Stages 1 (Initiation) and 2 (Orientation). Step 2 – COA Development, and Step 3 – COA Analysis encompass the same elements of OPP Stage 3 COA development with the exception of actually analyzing and deciding upon the COA. COA selection in the Australian JMAP is conducted in Step 4 – Decision and Execution, a step that also incorporates the OPP Plan Development – Stage 4 and Stage 5 – Plan Review. Like the OPP and MDMP, the JMAP incorporates Joint Intelligence of the Battlefield (JIPB) throughout the process as an integral component. For more details see Lin Zhang, Lucia Falzon, Mike Davies, and Ian Fuss, "On Relationships Between Key Concepts of Operational Level Planning," (Defence Science and Technology Division Australia, undated). Available from http://www.dodccrp.org/events/5th_ICCRTS/papers/Track2/017.pdf; internet; accessed 15 March 2008.

warning order."[62] With its receipt, a commander assembles the Joint Operations Planning Group (JOPG) and the relevant documents pertaining to the crisis. He then gives his staff the initial guidance necessary to begin the process. In the meantime, the J2 (intelligence) staff commence the four step Joint Intelligence Preparation of the Battlespace (JIPB) process and feed the results of the first three steps into the second stage of the OPP (orientation).

In the orientation stage the Chief JOPG leads the staff in an analysis of the mission that together with input from the first three steps of the JIPB (i.e. define the battle space, describe battle space effects, and evaluate the enemy) enables the production of a comprehensive mission analysis briefing to the commander. They consider a mass of information ranging from assigned and implied tasks, limitations imposed upon mission conduct, the nature of the three dimensions of the battle space, the adversary and other parties to the conflict, the freedom of action afforded their commander, and the endstate towards which they must aim. Prepared with this information, the commander and his staff will essentially determine "the nature of the problem, and confirm the results to be achieved."[63] Equipped with that information, the commander develops and issues his planning guidance (CPG) to the staff, and a warning order to subordinate formations.

Armed with the CPG, the JOPG will commence stage three, COA development. The staff will generally develop three COA, ensuring that each of the three is a unique solution to the problem in that they must meet the following criteria: they must be suitable to mission accomplishment, they must be feasible in terms of assigned resources,

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[62] Canadian Forces College, CFC XXX *Aide Memoire to the CFOPP*, Ver4.1 dated 22 February 2008. (Toronto: CFC, 2008), 10/42.

[63] Department of National Defence, B-GJ-005-500/FP-000 *CF Operational Planning…,* 4-4.

they must be acceptable in terms of costs versus results to be obtained, they must be compliant with existing doctrine and policies, and they must be exclusive in that they must each be fundamentally different from one another.[64] [65] The commander will either inject himself into the process periodically or wait until briefed on the three COA, at which time he may provide direction regarding refinements to the COA. In the meantime, the J2 staff will have completed the fourth and final step of the JIPB and will produce adversary COAs to include the adversary's most likely and most dangerous COAs against which the refined friendly force COAs will be wargamed. This process will provide the means to both comparatively analyze friendly COAs and determine weaknesses that may need to be accounted for. This analysis will assist the commander in selecting the COA that will form the basis of the plan that will be developed in the next stage, plan development.

During plan development, the JOPG will articulate the mass of details necessary to put it into effect in an operations order that will be issued to subordinate formations for execution. Before and during the execution stage, the plan will continue to be reviewed as the situation unfolds. This is the fifth and final stage of the JOPG. It is during this stage that the commander may alter a plan or perhaps even recommence the entire process where the situation is such that it warrants that severe a response.

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[64] Department of National Defence, B-GJ-005-500/FP-000 *CF Operational Planning…,* 3-4.

[65] Fundamental differences in a COA are ensured by emphasizing distinctions with respect to some or all of the following areas: the focus of the main effort; the scheme of manoeuvre for air, land, and maritime forces; task organization and phasing (where required); use of reserves; the primary defeat mechanism or primary method of mission accomplishment; and key logistical considerations. From Dr. Jack Kem, "Campaign Planning: Tools of the Trade," 2nd ed. (Leavenworth: U.S. Army Command and General Staff College Department of Joint and Multinational Operations, June 2006), 27.

Critiques of the Operational Planning Process

The OPP and its JIPB component are complicated analytical tools. As such they are articulated in doctrine in a manner that is mechanistic and gives an unfamiliar reader the impression that they are process driven analytical tools that are inflexible and, therefore, not suitable to fast-paced operational environments let alone the complex and dynamic asymmetrical environment that is the COE. Indeed, that argument has spawned a number of critiques of analytical decision making processes such as the OPP, though these critiques would seem to be resultant of a belief that commanders and staffs must slavishly adhere to the doctrine rather than apply it as a tool that is amenable to the situation. This belief likely stems from the fact that in order to learn the process it must first been taught from beginning to end. Only once the process is understood, and only when the situation warrants it, should the process be truncated. To have learned but never mastered the process, or to have mastered the process but never truncated it is to leave one with the impression that it must be slavishly adhered to.

Of the critiques, there are three main themes that will be briefly outlined below: the first is that the process obligates practitioners to waste time by generating multiple COAs. The second critique is that commanders and staffs abandon OPP when information and time are limited. The final critique is that the process leads commanders and their staffs to a false sense of certainty. This is said to develop out of their believed superior knowledge of the problem and their cleverly war gamed solution to that problem.

The three critiques would seem to be quite damning, at least that is until they are put into context. The OPP was developed from the NATO GOP which itself was closely

modeled after the US military's MDMP. The development of the MDMP goes back to 1932[66] and formally established by 1960 after multiple phases of refinement.[67] It has continued to be refined since and was the planning tool used throughout the Cold War. That it was conceived of, and employed as a decision making methodology to counter the conventional state versus state mechanized warfare does not leave the process wanting in the COE. To illustrate that point, shortcomings of each of the three critiques will be highlighted.

The first critique is one made by Peter Thunholm in a paper he wrote for the Swedish Defence Forces Doctoral Program. In a study of how people think, he watched several groups of military officers apply what he calls the "prescriptive military decision model"[68] to a typical decision problem. The findings of his study suggest that "the single-option decision strategy produced solutions of equal or slightly higher quality than those using the traditional multiple-options strategy."[69] Essentially, he found that the generation of three separate COAs simply forced those involved in the process to solve the problem three times, leaving far less time available to refine any one COA in the level

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[66] Major Michaele Hammel, "The Seven-Step Model – A Relevant and Ready Tool for the Future Force," Leavenworth: United States Army Command and General Staff Course School of Advanced Military Studies Monograph, 2003-04, 8. Adopted from Colonel Kevin Benson's "Decision Making in the Information Age" a 2002 US Army War College Monograph.

[67] Joseph Dichairo, "The Impacts of Digitization on the Army's Military Decision Making Process: Modification to the Estimate of the Situation," (Leavenworth: United States Army Command and General Staff College Master of Military Arts and Science Theses, 1997) 27.

[68] Peter Thunholm, "Decision Making Under Time Pressure: To Evaluate or Not to Evaluate Three options Before The Decision is Made?," 2. Available from http://www.militaryscience.org/public/media/publications/Thunholm,%20P.%20(2003)%20DECISION%20MAKING%20UNDER%20TIME%20PRESSURE.pdf. Internet; accessed 23 February 2008.

[69] *Ibid*., 1.

of detail that it required.[70] Additionally, the final COA, having taken more time to arrive at and having been articulated in far less detail, was usually of equal or a slightly lesser value than a solution arrived at by a single option decision maker.

John Schmitt, in his paper entitled *A Systemic Concept for Operational Design* concurs with Peter Thunholm's assertion, albeit for different reasons. Schmitt's premise is that if a commander is able to understand the problem in sufficient depth he will intuitively arrive at a solution thus negating the necessity to develop multiple COA.[71] He acknowledges that this initial solution will be far from perfect, particularly in a complex environment such as the COE.[72] He suggests instead that it is necessary to first develop a "reasonable initial solution and then improve it iteratively and continuously" as the complex dynamics of the problem are uncovered over time.[73] In effect, Schmitt sees a great reduction in Stage 3 COA development, as he believes that the Stage 5 plan review process will facilitate better understanding of the problem and through that an enhanced capacity to produce a more workable plan. This is a trial and error approach to planning.

The second major critique of OPP is that staffs and commanders abandon it during operations when time is limited and information is sparse. Dr. David Bryant, a defence scientist with the Toronto office of Defence Research and Development Canada, cites a number of studies that, together with his observations of the 1st Canadian

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[70] Peter Thunholm, "Decision Making Under Time Pressure…," 27, 29.

[71] Schmitt, J.F. "A Systemic Concept for Operational Design." Available from http://64.233.167.104/search?q=cache:NkstDkUKvWAJ:www.mcwl.usmc.mil/file_download.cfm%3Ffilesource%3Dc:%255CMCWL_Files%255CC_P%255CSchmitt_Design_v1_0_with_Bibliography.pdf+%22a+systemic+concept+for+operational+design%22&hl=en&ct=clnk&cd=1. Internet; accessed 23 February 2008, 1.

[72] *Ibid*., 29.

[73] Schmitt, "A Systemic Concept…," 29.

Mechanized Brigade Group Headquarters on exercise, clearly show that staffs quickly deviate from the analytic planning process that is the OPP. [74] Similarly, Lieutenant Colonel Diggins, of the British Army, noted that officers on their command and staff course "abandoned or modified the only technique they had been taught to conduct … decision making," when under pressure and lacking detailed information.[75] Finally, Monique Kardos and Taryn Chapman, of the DSTO Systems Sciences Laboratory in Australia, found similar results during an experiment in which a number of military and civilian teams were given 20 minute wargame sessions in which they were expected to use the Australian military's equivalent to OPP (JMAP).[76] These studies and others are overwhelming in their assertion that staffs quickly abandon the analytical planning process upon which MDMP, JMAP, and the OPP are based.

The final critique is that the process leads commanders and their staffs to a false sense of certainty given their believed superior knowledge of the problem and their cleverly war gamed solution to that problem. Essentially, the OPP is seen to be a mechanistic, analytical process that was designed to bring a degree of order to the complexities of conventional state versus state mechanized warfare.[77] OPP leads commanders and their staffs to analyze a problem, develop COAs to deal with it and fine

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[74] David Bryant, "Can We Streamline Operational Planning?" *Canadian Military Journal* 7, no. 4 (Winter 2006-2007), 84.

[75] LtCol Diggins, "The Estimate and the Emperor's New Clothes," The British Army Review 124 (Spring 2000): 4.

[76] Monique Kardos and Taryn Chapman, *Constrained Planning and Wargame Performance in Military and Civilian Teams,* DSTO-GD-0352, (Australia: DSTO Systems Sciences Laboratory, February 2003), 23.

[77] Lieutenant-Colonel Craig Dalton, "Systemic Operational Design: Epistemological Bumpf or the Way Ahead for Operational Design?" (Leavenworth: United States Army Command and General Staff College School of Advanced Military Studies Monograph, 2005-06), 46.

tune the selected COA during wargaming such that they feel confident in their solution. The challenge is that the higher the degree of complexity inherent within the problem, such as those found within the COE, "the more difficult and potentially counterproductive it is to predict … outcomes."[78] This point was highlighted in Malcolm Gladwell's analysis of how a "rogue" Persian Gulf commander was able to counter the US Military in a wargame called Millenium Challenge in his book entitled *Blink*.[79] Essentially, the U.S. military pitted its technologically superior military against a far less capable enemy, yet faired quite poorly. In his analysis, Gladwell cites findings by a researcher named Stuart Oskamp who gave a group of psychologists increasingly greater information about a patient from which they were to make a diagnosis. It was found that "as they received more information … their certainty about their own decisions became entirely out of proportion to the actual correctness of those decisions."[80] The irony, as Gladwell sees it is that the "very desire for confidence is precisely what ends up undermining the accuracy of their decision,"[81] an observation that counters the wisdom of the three option COA development and wargaming aspects of the OPP.

Counter Critiques of the Operational Planning Process

In the first critique both Peter Thunholm and John Schmitt describe how the subjects of their experiments were able to arrive at intuitive solutions that negated the

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[78] Lieutenant-Colonel Craig Dalton, "Systemic Operational Design, 32.

[79] Malcolm Gladwell, *Blink: The Power of Thinking Without Thinking*, (New York: Back Bay Books, 2007), 102.

[80] *Ibid*., 139-40.

[81] *Ibid*., 140.

requirement to develop multiple COA. This saved time and ultimately facilitated the development of the single COA in greater detail. Put into context though, their experiments involved relatively simple military problems that, due to their somewhat repetitive nature enabled the subjects within the experiment to develop an understanding of the problem in greater detail. Subjects in the experiment were, therefore, able to draw upon their new found experience to develop solutions. The results of their analysis are suspect because they do not replicate the situations under which commanders make decisions.

In the COE, commanders typically serve in their position anywhere from six months to a full year. In that timeframe their learning curve, and that of the staff's, is immense as they come to terms with the problem. The novelty of the problem is of sufficient scale that intuitive solutions cannot be arrived at based upon past experience as the COE is dynamic and adaptive, and it differs greatly from one region to another given the actors found within it. Until a commander is sufficiently well versed with the problem, his capacity to make intuitive decisions will be limited.[82] Additionally, operations within the COE tend to be coalition in nature. The coalition staff's ability to critically analyze a new problem and develop a solution will be hampered by language, varied degrees of competence, experience, and familiarity with the particular problem with which they are faced. OPP and its peer processes provide a systematic framework to analyze the problem and develop solutions to it. Colonel William Reitzel wrote in *Background to Decision Making* that formulas are easy to teach. "Their regular use make

[82] A commander need not have prior experience with a particular situation, nor with a particular adversary in order to arrive at a decision intuitively. Lessons derived from related experiences may be extrapolated to aid in decision making. The greater the experience and the closer its relation to the problem, the greater the capacity to decide intuitively.

it possible for a wide variation in human competence to be reduced to a reliable common denominator."[83] In other words, the OPP is the common denominator that provides disparate staffs a vehicle by which to meld their collective capabilities into one system that can produce for a commander a well reasoned and complete COA.

While the process in its full version may be used in the initial stages of an operation, over time staffs will meld into effective teams, whilst their knowledge and understanding of the problem grows. Their capacity to utilize the decision making process will become more fluid to the point where they will not recall having completed some steps within each stage. The commander, too, will shorten the process by "selectively exclude[ing] or limit[ing] some of the tasks in order to meet time limitations in a crisis action-planning situation."[84] This is a point that would seem to be lost on those that espouse the second critique of OPP and like decision making processes. These processes are doctrine; they provide guidance on the conduct of a well thought-out and detailed process that was designed to deal with the complexities of warfare. It can be used in its entirety or, more often than not, truncated by commanders and staffs that have had the opportunity to gel as a team and to understand the problem with which they are dealing. It is not a process that would necessitate dogmatic adherence. Indeed, familiarity with the problem may enable a commander to work out a COA by intuition after which his staff will analyze that singular COA in a deliberate fashion (time permitting) so as to ensure all nature of potential contingencies are accounted for. Malcolm Gladwell said that while deliberate thinking "can set the stage for rapid

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[83] William Reitzel, "Background to Decision Making," 1st ed. (Rhode Island: US Naval War College Paper, June 1958), 1.

[84] Department of National Defence, B-GJ-005-500/FP-000 *CF Operational Planning…*, 3-1.

cognition, … truly successful decision making relies on a balance between deliberate and instinctive thinking."[85]

Rapid cognition derived from deliberate thinking and its combination with instinctive thinking would seem to counter Gladwell's citation of the Oskamp psychologists discussed earlier. In that study, it was determined that the more information presented the psychologists the greater their confidence in their diagnosis which ironically was becoming farther and farther from correct. That will be a challenge for commanders and their staffs and is the third critique. The more a problem is studied the greater the chance a commander will not be caught unaware for having not thought of potential problems and solutions to them in advance. In the immediacy of life and death in warfare, commanders must be prepared for any and all contingencies with which they can familiarize themselves. Time is often not an option, and having completed an analysis in advance a commander will have the capacity to act instinctively and decisively. Napoléon said it best:

> *If I always appear prepared, it is because before entering on an undertaking, I have meditated for long and have foreseen what may occur. It is not genius which reveals to me suddenly and secretly what I should do in circumstances unexpected by others; it is thought and meditation*.[86]

The decision making processes that provide them this ability also facilitates interoperability,[87] a critical component of what Colonel John Vance calls "contribution

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[85] Malcolm Gladwell, *Blink…,* 141.

[86] Canadian Forces College, "Combined and Joint Staff Officer's Handbook," AL 4-2005-10-28. Toronto: CFC, 2005, II-2-3C1-1/10.

[87] Brigadier General Veyrat, "Interoperability and Complimentarity of the Military Reasoning Methods," *Objectif Doctrine* no. 28-08 (2001): 7.

warfare" (e.g. the small partner in a coalition),[88] which is prevalent in the execution of operations within the COE. The analytical decision making processes used by the vast majority of potential coalition partners have been studied and exercised extensively. They have, in effect, become culturally ingrained. Their replacement with another process will take at least as much time to ingrain as this process did. That is not a reason not to replace them with a better tool; it is simply recognition that a better tool must be proven. It must also be universally adapted.

The decision making processes in place today evolved over more than half a century. The capacity to utilize these processes effectively has come with fine tuning during the trials and tribulations of using them in conventional warfare. It was the experiences in this capacity that gave practitioners the ability to comprehend the conventional battle and the complexities of it. The same cannot be said for the unconventional battle that is found within the COE. It presents a different problem set; one that will also take time to understand. It is more than the complexities of a particular situation that a commander must understand and become familiar with, it is the type of warfare encountered that must also be understood. It is not, therefore, only the decision making process that needs to be examined, rather it is the knowledge necessary as a start state to be able to use that tool in the COE.

It must not be forgotten that conventional warfare is also a component of the COE; and while it is less prevalent at the moment, it certainly continues to pose a threat

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[88] Colonel J.H. Vance, "Tactics Without Strategy or why the Canadian Forces do not Campaign," in *The Operational Art: Canadian Perspectives: Context and Concepts*, edited by Allan English, Daniel Gosselin, Howard Coombs and Laurence M. Hickey, 271 - 291. (Kingston, ON: Canadian Defence Academy Press, 2005), 271.

to sovereignty at a level that is equal to, and arguably greater than, unconventional threats. The effectiveness of current decision making processes will grow as knowledge of the environment and the nature of warfare against which they will be applied grows. Then again, there may well be superior processes in development that could replace OPP altogether. The next chapter will review SOD and the one that follows it will provide a comparative analysis of the two as a means to determine whether OPP has continued utility or whether SOD ought to be considered as a replacement of it.

CHAPTER 4 – SYSTEMIC OPERATIONAL DESIGN

As we have already seen in Chapter 3, analytical approaches to decision making such as OPP, and its peer processes, prescribe methods by which a decision maker is to consider a problem, develop possible solutions, evaluate potential solutions against one another in accordance with an assigned evaluation criteria, and finally to synthesize the results in order to determine the optimum COA.[89] In this chapter, a second approach to decision making, the naturalistic approach, will be considered. Naturalistic approaches such as SOD, are models based on how people actually make decisions. As the approach is argued to be modeled after natural processes, it is asserted by designers that it is superior in dynamic situations, characterized by continually changing conditions.[90] The naturalistic approach is the method by which experienced decision makers tend to make decisions and for whom the consequences of error are immense. [91] To employ this approach decision makers capitalize on their "experience, expertise, knowledge, and intuition in response to ill-structured, uncertain, dynamic, quick-tempo, or high stakes problems."[92] Before looking at the concept of SOD, it is necessary to first understand the relation of concepts to doctrine.

Doctrine is a synthesis of history and theory, and theory is derived from a concept. Thus when doctrine is challenged as a result of some form of environmental change, new concepts are developed and some of them are ultimately refined into a new

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[89] Gary Klein and David Klinger, "Naturalistic Decision Making," *Human System IAC Gateway*, vol. 2, no. 1 (Winter 1991): 16 – 19. Journal on-line; available from http://www.maxwell.af.mil/au/awc/awcgate/decision/nat-dm.pdf; Internet; accessed 15 March 2008, 16.

[90] *Ibid*., 16.

[91] *Ibid*.

[92] Matthew Lauder, "Systemic Operational Design: Freeing…," 4.

or evolved doctrine. To fail to consider new concepts as they relate to doctrine is to become dogmatic adherents to that doctrine, which is contrary to an organization that must be adaptive to achieve success in the COE. The IDF, having found their analytical decision making process wanting, developed the concept of SOD.[93]

Systemic Operational Design – A Primer

Systemic Operational Design was developed by Brigadier General (retired) Shimon Naveh, formerly of the Israeli Defence Force's (IDF) Operational Theory Research Institute. It was designed by Israeli's and for Israeli's to employ in their unique circumstances with the intent of transforming the methodology by which they approached the asymmetric threat. It is so new that it does not yet exist in doctrinal form, though it heavily influenced the foundation of the IDF's relatively new doctrine that was issued in April 2006.[94]

In its infancy, SOD was instructed to a succession of groups (consisting of 10 to14 general officers of the IDF) during eight day seminars that were a mix of theory and practical exercises.[95] The intent was to "promote the conditions for a cultural change in the IDF's modes of functioning and thinking as well as mobilizing the critical mass of generals to ensure the integration of SOD into the IDF"[96] (an attempt that failed as shall

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[93] Lieutenant Colonel William Sorrells, Lieutenant Colonel Glen Downing, Major Paul Blakesley, Major David Pendall, Major Jason Walk, Major Richard Wallwork, "Systemic Operational Design: An Introduction," (Leavenworth: United States Army Command and General Staff College School of Advanced Military Studies Monograph, 2005), 10.

[94] Matt Matthews, "We Were Caught Unprepared: The 2006 Hezbollah-Israeli War," *The Long War Series - Occasional Paper 26 of the U.S. Army Combined Arms Centre*, (Leavenworth: Combat Studies Institute Press, 2008). Available from http://usacac.army.mil/CAC/csi/RandP/CSIpubs.asp#LongWar; accessed 17 March 2008, 26.

[95] Sorrells *et al*, "Systemic Operational Design…," 8.

[96] *Ibid*.

be seen in the discussion of the Israeli-Hezbollah War of 2006). At the end of the year, the Chief of Defence Staff of the IDF instituted a school called the Operational Theory Research Institute (OTRI) to continue the investigation into operational art.[97] At the institute, senior leadership was taught SOD. Eventually, junior officers attending the Command and General Staff College course were also taught SOD.[98]

SOD applies systems theory[99] to the operational art.[100] Like OPP, it is intended to translate strategic direction and policy[101] into "a unified plan for military action."[102] SOD focuses on the relationship between the component parts of a system to develop rationale that accounts for the logic of that system. In doing so it employs a cycle of design, plan, act, and learn that is continuous as, once a system has been influenced it changes and approaches must therefore be altered accordingly. In other words, each engagement with an adversary is seen as an opportunity to learn, thus ongoing combat will allow a detailed picture to be developed of how the adversary acts in certain sets of circumstances. This is referred to as a strategic raid as it causes adversaries to reveal

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[97] Sorrells *et al*, "Systemic Operational Design…," 8.

[98] *Ibid*., 9.

[99] Systems theory was proposed in the 1940's by the biologist Ludwig von Bertalanffy. "He emphasized that real systems are open to, and interact with, their environments, and that they can acquire qualitatively new properties through emergence, resulting in continual evolution. Rather than reducing an entity to the properties of its parts or elements, systems theory focuses on the arrangement of and relations between the parts which connect them into a whole." For more on systems theory see F. Heylighen and C. Joslyn, "What is Systems Theory?" *Principia Cybernetica Web*, (Brussels: Principia Cybernetica, 1 November 1992), available from; http://pespmc1.vub.ac.be/SYSTHEOR.html; Internet Accessed 28 March 2008.

[100] Operational Art – is defined as "the skill of employing military forces to attain strategic objectives in a theatre of war or theatre of operations through the design, organization and conduct of campaigns and major operations." From, Department of National Defence, B-GJ-005-300/FP-000 *Canadian Forces Operations*, (Ottawa: DND Canada, 2005), GL-7.

[101] Sorrells *et al*, "Systemic Operational Design…," i.

[102] Department of National Defence, B-GJ-005-500/FP-000 *CF Operational Planning…,* 2-7.

their form thus enabling learning of their intent, capabilities, and methodologies.[103] The 1942 raid on Dieppe[104] was a demonstration of the utility of the concept given the insight it provided Allied commanders into German defensive preparations and counter moves; an insight of significant value to the planning and conduct of the invasion of continental Europe at Normandy known as Operation Overlord.[105] This is a simplistic comparison, but what it highlights is that commanders need, on occasion, to undertake actions whose purpose is to gain a better understanding of the enemy. In SOD, the strategic raid is a cyclical process in which the knowledge gained from one strategic raid is applied to the next cycle of design, plan, act, and learn. Thus, "rather than a pre-determined campaign path, … each operation plays a critical role in informing the conduct of future operations after an opportunity to conduct learning has occurred."[106] It is an iterative process of

[103] Sorrells *et al*, "Systemic Operational Design…," 21.

[104] In the early hours of 19 August 1942, an amphibious force of some 6,000 troops comprising the 2nd Canadian Infantry Division set sail from England bound for the small port of Dieppe on the French Coast. This was to be the Canadians first foray into the war in Europe; indeed it would be the first for the Allies since the German Blitzkrieg into France had ousted the British through Dunkirk. Their primary mission was to generate a belief within Hitler that a second front was imminent and thus compel him to transfer troops from the Eastern Front to counter it. The secondary purpose of the raid was essentially to conduct a reconnaissance in force. The Allies hoped, through a relatively small offensive operation, to test the enemy's strength while obtaining technical information ranging from critical components of a radar station to weapons sights. Finally, it was hoped that a raid of this size would compel the Luftwaffe to launch in support of the coastal defence forces and in so doing subject themselves to battle with the RAF and RCAF. By early afternoon of that fateful day, some 900 soldiers lay dead in and around Dieppe. Another 100 would later die of their wounds. Meanwhile, some 1,946 soldiers would spend their war in a German prisoner of war camp. This raid was clearly a tactical failure. Conversely, it was a "significant strategic success" as the aims set out for the raid had been met. For more on the idea of Dieppe as a strategic success, see Glantz and House, *When Titans Clashed: How the Red Army Stopped Hitler,* (USA: University Press of Kansas, 1995), 148.

[105] Lieutenant General (Retired) Don Holder in an email exchange with the author 25 March 2008.

[106] Sorrells *et al*, "Systemic Operational Design…," 22.

reframing and therefore does not attempt to "plan a campaign from beginning through to a specified 'end state.'"[107] It is a learning by trial and error process.

Systemic Operational Design as a Process

SOD has two major components that themselves are subdivided into subcomponents, totaling seven structured discourses. Figure two is a representative diagram. "These components work from the broad to the narrow, the abstract to the concrete, leading the designer toward a final design." [108] While each discourse must inform the next, the process is not sequential; rather it is "fluid, iterative, and recursive."[109]

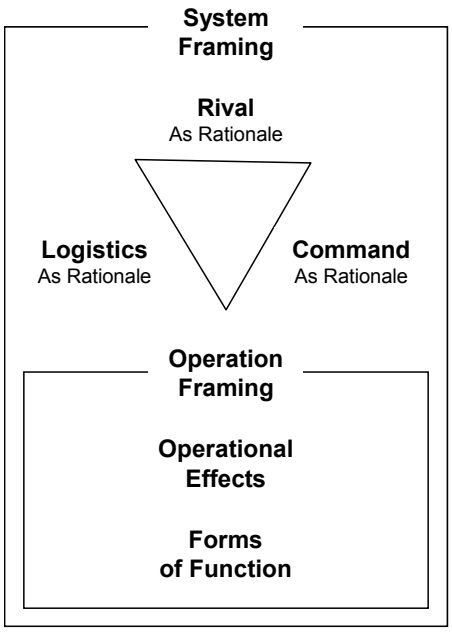

Figure 2: Overview of SOD[110]

[107] Sorrells *et al*, "Systemic Operational Design…," 21.

[108] *Ibid*., 22.

[109] *Ibid.,* 22.

[110] Shimon Naveh, "Questions of Operational Art: The Depth Structure of Systemic Operational Design," draft, October 2005, 7.

The first major component of SOD is system framing. System framing seeks to "rationalize the strategic directives in broad context and relate them to the specific context under study."[111] In simple terms, this discourse examines the area of operations and those areas that influence it in order to conceptualize what within it changed to have caused the environment to be such that intervention is deemed necessary. To do so, the relationship between the component parts, nodes, or actors must be understood.[112] This, in effect, puts the problem into context or in SOD terminology it distills that part of the larger system into the smaller one to be studied.[113] In other words, it pairs down the total number of actors within the environment to those that are directly interconnected with the adversary, thus reducing the scope of that which must be considered to the essential and in so doing making the problem definition manageable. With that completed, the motivations, ideologies, and other factors that affect the component parts of the system, or problem space, are analyzed in order to formulate ideas to explain known phenomena and to project logical trends amongst them.[114] To accomplish the above, the discourse is broken-down into three subcomponent discourses called rival as rationale, logistics as rationale, and command as rationale.

The first element of system framing is rival as rationale. This discourse examines the logic, motives, and behaviour of the adversary (rival in SOD terminology), his relationship with his sub component parts and the other component parts within the

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[111] Sorrells *et al*, "Systemic Operational Design…," 23.

[112] *Ibid*.

[113] *Ibid.*

[114] *Ibid*., 24.

problem space including that of the intervening force.[115] The intent is to determine the reason or motivation for the rival's action, and to determine exploitable differences between the rival and other component parts in terms of values, goals, and practices. With an understanding of the adversary and the environment in which it operates, the next discourse, command as rationale, simply determines the most effective command and control structure necessary to facilitate effective operations within the area of operations. The final subcomponent of the system framing discourse is logistics as rationale that defines the manner in which the intervention force will be sustained.

The second major component of SOD is operation framing. This discourse translates strategic intent into a campaign design and a COA that is shaped by the context in which the problem space was defined in rival, command, and logistics as rationale.[116] The two subcomponents of this discourse are operational effects and forms of function. Operational effects are those that are meant to be achieved by the implementation of the COA. Ultimately, these effects will be analyzed as a means to determine what resultant changes have occurred within the problem space or system as a result of actions taken, and to apply those lessons to a new COA (e.g. the design, plan, act, and learn cycle) or even a new operational design should the changes have been significant enough to warrant it. The forms of function discourse translates the COA into groupings and tasks for the subordinate elements of the intervention force and, through them, translates the COA into a plan for execution.

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[115] Sorrells *et al*, "Systemic Operational Design…," 24.

[116] *Ibid*., 26.

Systemic Operational Design and the Israeli-Hezbollah War of 2006

SOD is a new concept for campaign design and operational planning. It is little known outside of Israel. That said the concept is making inroads in Western military circles, primarily through the School of Advanced Military Studies (SAMS) at the United States Army Command and General Staff College. There, Shimon Naveh has been a lecturer on the subject and has greatly influenced students of SAMS since as early as 2004 when he was brought there on retainer. These students, with representation from across NATO countries and elsewhere, have written scores of papers on the subject as part of their programme requirements. Their work has been complimentary to the efforts of various defence scientists that are proponents of naturalistic decision making methodologies. SOD is, therefore, very much at the conceptual stage and has only loosely made it into doctrine in one instance, that being the Israeli doctrine of April 2006. What has been written is therefore academic, and the base source of information remains its principle author, the quite influential Shimon Naveh. SOD should not be discounted; rather, the concept will require a greater degree of examination, testing, and trial to validate it before taking the bold step of replacing the existing doctrine that has evolved over decades in a very real and practicable way.

The best known instance of the employment of SOD was during the Israeli-Hezbollah War of 2006. It is somewhat ironic that this system, developed to enable forces to operate effectively within the asymmetric environment of the COE, saw Israel's IDF who, "after years of highly successful counterinsurgency [COIN] operations against the Palestinians … [appear] remarkably inept to conduct a successful conventional

ground campaign against Hezbollah."[117] How this happened remains under review in Israel and is the subject of Matt Matthews' paper entitled *We Were Caught Unprepared: The 2006 Hezbollah-Israeli War*. That the war is very recent history, and that it is the only practical example of the employment of SOD, leaves Matthew's criticisms with no rival. The potential for significant and unjust bias against SOD is, therefore, high. This is not a critique of Matthew's work, rather it is an acknowledgement that it represents one analysis; one view. His comments specifically

function.[120] But, it was more than operational necessity and tempo that prevented the conduct of conventional training. Israel's land forces were starved of training funds. Funding was focused in favour of the air force resultant of lessons derived of the first Gulf War and Kosovo. The leadership of the IDF, as a result of lessons that would really seem to be anomalies, chose to ascribe to the dominance of airpower and precision strike as the means to "immobilize critical military systems."[121] The performance of the IDF in the war against Hezbollah in 2006 was largely determined by their having been lured into the comfort of the war in which they were engaged, and a failure to look beyond that war to the next phase or indeed the next war.[122] This was coupled with the adaptation of a new doctrine that seems to have been effected in a manner that failed to account for the challenges inherent in changing their existing analytical planning process; challenges that included difficult language.

The major problem the IDF had with SOD was its terminology and methodology.[123] Few could understand the new doctrine that had been built with SOD as its foundation.[124] Indeed, Shimon Naveh contends that the IDF Chief of the General Staff, Lieutenant General Dan Halutz, who signed the doctrine into effect "never really

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[120] Matt Matthews, "We Were Caught Unprepared…," 27.

[121] *Ibid*., 24.

[122] Matt Matthews, "Interview with BG (Ret.) Shimon Naveh," Operational Leadership Experiences Project, (Leavenworth: Combat Studies Institute, 1 November 2007) Available from http://cgsc.cdmhost.com/cgi-bin/showfile.exe?CISOROOT=/p4013coll13&CISOPTR=754&filename=755.pdf#search=%22SOD%22; accessed 13 February 2008, 9.

[123] Matt Matthews, "We Were Caught Unprepared…," 24.

[124] *Ibid*., 25.

bothered to learn and understand its applications."[125] Ron Tira of the IDF's Campaign Planning Department elaborated by observing that "field commanders did not like the doctrine, principally because they did not understand it."[126] Indeed, the language is seen to be so descriptive and detailed as to hinder understanding, particularly as it "presupposes a certain amount of knowledge of General Systems Theory and some basic understanding of philosophy."[127] Brigade commanders reportedly could not decipher some of the elements of an operations order owing to language. "They were at a complete loss to understand them."[128] This point by Matthews is contended by Naveh who does not believe this could have occurred, particularly given his knowledge of the brigade commander in question. He sees that commander as quite creative, though he does concede that at times he is too much so, which is reflected in his choice of language.[129] Whatever his belief, efforts to inculcate the language and methodologies of SOD into the senior levels of the IDF in the early years had either failed, or were of such complexity as to defy retention.

It would seem Israel failed in 2006 not for having employed SOD, but for having focused its future plans on the present war and the unique circumstances that surrounded it. Strategies, training, and funding priorities failed. SOD is also said to have failed the

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[125] Matt Matthews, "Interview with BG (Ret.) Shimon Naveh", 4.

[126] Ron Tira as quoted by Matt Matthews in "Interview with BG (Ret.) Shimon Naveh", 26. Ron Tira is an author who was formerly an Israeli air force (IAF) fighter pilot, and section chief of the IAF intelligence division ("Lamdan"). In the timeframe that Matthews was corresponding with him, he was a member of the IDF Campaign Planning Department.

[127] Sorrells *et al*, "Systemic Operational Design…," 29.

[128] Matt Matthews, "We Were Caught Unprepared…," 63.

[129] Matt Matthews, "Interview with BG (Ret.) Shimon Naveh," 8-9.

IDF yet it appears that what really happened was that SOD was poorly introduced to the force and therefore employed haphazardly. This is perhaps as a result of the fact that the doctrine of which SOD was the foundation was meant for employment at the operational level, yet the language resultant of its use was not familiar to the tactical practitioners. Unlike OPP that is across the three levels of warfare (strategic, operational, and tactical) SOD is meant for the strategic and operational level. Nonetheless it still "requires[s] understanding of its very nature down to the lowest levels and changes the way reports are fed up the chain."[130] If that is the case, the logic of only employing SOD at the strategic and operational levels is flawed. And, if it must therefore be taught at all levels, is it realistic to expect all officers to have the requisite knowledge of systems theory and philosophy to understand SOD?

Praise of Systemic Operational Design in Carefully Measured Doses

Lieutenant General (retired) Don Holder has high praise for elements of SOD.[131] He worked with Shimon Naveh as his expert advisor on an experimental exercise that employed SOD and is quite familiar with its strengths and weaknesses.[132] The strength of SOD, from his perspective, is "its breadth of consideration in framing the situation, its

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[130] Sorrells *et al*, "Systemic Operational Design…," 35.

[131] Lieutenant General (retired) Don Holder is a former U.S. Army officer with multiple command and combat tours. His knowledge has been leveraged in his employment within professional development and doctrine institutions of the U.S. Army. Today, he is a consultant assisting in the training of U.S. Army divisions and brigades. Some of his views on SOD were shared in an email exchange with the author.

[132] The exercise in question was Unified Quest 2006 (UQ06). UQ06 was the fourth in a series of annual wargames designed to determine how the U.S. will fight the unconventional adversary beyond 2017. The intent of UQ06 was to concentrate on joint operations "with a focus on irregular warfare, strategic agility, full-spectrum operational art, generating forces, interagency plus multi-national and non-governmental operations, and homeland defense." LTG Holder's involvement was as a land component commander. For more information on the UQ series of exercises, see: John Harlow, "Unified Quest to Test Future Concepts, Capabilities," *GlobalSecurity.org*, available from http://www.globalsecurity.org/military/library/news/2006/04/mil-060418-arnews01.htm; Internet; accessed 8 Apr 08.

application of systems theory ideas, its stress on the provisional nature of conclusions, and its call for continuous learning and adjustment of the concept."[133] In General Holder's experience, he found that a fairly "exhaustive framing effort" lead him well beyond his "immediate area of concern" and "disclosed secondary and more distant relationships which bore on the operation."[134] He found this particularly valuable but does caution against endless and unproductive discussion on the subject. Additionally, he found the idea of the operational raid worth adding to doctrine.[135] This is not a new practice as evidenced by the Raid on Dieppe and other similar operations. What is new, is the iterative approach to the strategic raid that eventually will allow a commander to understand his adversary, predict his responses, and therefore shape an outcome; all for having been able to get within the adversary's decision action cycle. This is critical to success in unconventional warfare particularly as technical intelligence cannot inform a commander to the degree necessary.[136]

There is a dearth of literature that speaks to weaknesses of SOD. It is quite new, and it remains conceptual, thus the majority of analysis has been made by SOD proponents. Weaknesses identified herein, therefore, have been limited to those espoused

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[133] Lieutenant General (Retired) Don Holder in an email exchange with the author 25 March 2008.

[134] *Ibid*.

[135] The idea of the operational raid was discussed earlier in the text. It presupposes that operational commanders must sometimes conduct operations as a means to learn more of the adversary through development of the situation. This is not a new concept, but in the case of SOD it is the iterative approach taken to frame the situation. It is completed in a four step cyclical process that begins with a design, that evolves into a plan that is acted upon, the results of wh

by General Holder and, those expressed by individual's interviewed within Matt Matthews paper *We Were Caught Unprepared: The 2006 Hezbollah-Israeli War*. General Holder found the weakness of the concept to be at the bottom end of the cycle. He finds the concluding steps of SOD to be "vague and so ethereal as to be unusable."[137] The final discourse in SOD is the framing of the actual operation which essentially provides the operational design along specific lines of operation and facilitates the translation of that design into an operational plan. In this portion of the process he finds the language about form of function to be "indecipherable" an example he highlights being "relativization of space-time continuum ordering the function of staging-phasing of an operation" which he finds does not add clarity.[138] This speaks directly to the challenges Israeli brigade commanders and staffs had in 2006.

It is unfortunate that the only example of the utility of SOD was a negative one as this may tarnish the concept in perpetuity. It would seem that the process is not yet sufficiently mature to evolve from the conceptual stage to that of doctrine. There is, however, clear and unequivocal utility in the concept. Its greatest strength can be distilled down into it being what amounts to an exceptionally detailed orientation, that having been conducted to such great extent leads a commander to an intuitive COA. This coupled with the concept of using strategic raids in an iterative process, has plenty of utility in the COE. The next chapter will comparatively analyze OPP and SOD, after which the potential for some hybrid of the two will be postulated.

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[137] Lieutenant General (Retired) Don Holder in an email exchange with the author 25 March 2008.

[138] *Ibid*.

CHAPTER 5 – COMPARATIVE ANALYSIS of OPP and SOD

The intent of this chapter is to conduct a comparative analysis of OPP and SOD in order to establish similarities, differences, and applicability to the COE. Given that the two operational design/planning methodologies are quite different in terms of analytical versus naturalistic decision making processes, and that there is no doctrinal criteria established to assess effectiveness, three criteria will be employed to highlight essential differences, and similarities alike.

In the first instance, the utility of employment as a decision making process across the spectrum of conflict will be assessed. Next, the universalizability of each of the processes will be examined in terms of suitability to hastily formed coalition headquarters staffs with varying degrees of knowledge, experience, professional development, and linguistic capacity. Thirdly, the comprehensiveness of each process will be reviewed. Finally, the dogma versus doctrine debate will be discussed and a potential hybrid solution that incorporates the best elements of both processes will be postulated.

Utility Across the Spectrum of Conflict

In Chapter 2 the development of OPP was reviewed. It has been argued that it evolved from decades of practice, but was developed to be employed as a decision making tool in the conventional battle. It rose to prominence as an operational level decision making tool during the Cold War; particularly in the 1980's when the major threat was that of the Soviet Union invading Germany through the Fulda Gap. Since the end of the Cold War, the nature of warfare has changed to that of the COE. In it, commanders are required to be able to conduct operations across the spectrum of conflict;

a spectrum that includes everything from the high intensity major combat operations in which the conventional battle is prominent, to the low intensity peacetime military engagement on the other extreme with COIN operations and peace support operations (PSO) in the middle.

Chapter 2 also considered that conventional forces were still relevant to the COE, despite the fact that the focus of military operations had shifted from the high intensity to the medium and low intensity ends of the spectrum. Having established that in the COE all levels of conflict remain extant, it invites the question as to whether one decision making process is suitable to the entire spectrum. This is clearly the desirable condition, as to do otherwise would negate the reality that military forces will have to be prepared to operate across that spectrum simultaneously or in very close sequential order as has been the experience to date in Afghanistan, Iraq, and Lebanon. In this, it is difficult to compare SOD to OPP. SOD is a relatively new concept that has not yet evolved into a doctrine, and there is a paucity of information about it.[139] What has been written of SOD is generally quite positive, though lacking in practical evidence. What little is written of operational experiences with SOD, is limited to the 2006 Israeli-Hezbollah War.

[139] Patrick McGlade, "Effects-Based Operations Versus Systemic Operational Design: Is There a Difference?" (Wright-Patterson Air Force Base: Air Force Institute of Technology Graduate Research Project, 2006), 16.

In that war, SOD was seen to be a contributing factor in Israel's first ever loss in conflict.[140] On the surface this would seem odd, as SOD was developed by Israeli's and for Israeli's to operate within their operational theatre. It is particularly disconcerting as in that theatre of operations, Israel's enemies are known and reside immediately next-door.[141] Thus the culture, military capacity, methodologies and ideologies of their enemy are well known and understood at all levels of command within Israel.[142] The same cannot be said for Western military commanders who will be dispatched to undertake operations across the globe in unfamiliar terrain and cultural environments, and against enemies that employ methodologies that are fueled by ideologies the likes of which will be completely foreign to them.[143] To take the singular practical example of SOD's utility, or lack thereof, would be premature, particularly as there were many contributing reasons for Israel's lackluster performance, the most prominent of which, in terms of SOD, was the manner and haste with which the process was introduced.

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[140] In the war against Hezbollah in 2006, Israel is assessed to have lost both tactically and strategically according to Jed Babbin, author and contributing editor to The American Spectator in his article entitled "Loose Cannons: Narallah Rules," *The American Spectator*, 14 August 2006, http://www.spectator.org/dsp_article.asp?art_id=10218; Internet; Accessed 20 April 2008. To be clear, Israel has lost at the tactical level in the past. During the 1973 Yom Kippur War (the Israeli name) or Ramadan War as it was known to the Arab states, Israel lost significant ground, weapons systems, and soldiers in the first week. It was only thereafter that they were able to just barely turn the tide and emerge as the "obvious military victor." At the strategic level though, the Arab states had achieved an important psychological and diplomatic victory. They had achieved all of their war aims whereas Israel had not. They had proven their capacity to gather sophisticated intelligence, they had planned a campaign at a level well beyond their previous efforts, and they had proven that Israel was not invincible. In effect, Israel had won the war, but the manner in which they won it proved to be a loss. For more on the 1973 War see Ian Bickerton, and Carla Klausner, *A History of the Arab-Israeli Conflict*, 5th ed. (New Jersey: Pearson Education Inc., 1995), 168 – 171. The 1973 Arab-Israeli War was perhaps the genesis of the evolution of SOD. Israel's survival in the Middle East is so perilous that they cannot afford defeat at any level.

[141] Patrick McGlade, "Effects-Based Operations Versus Systemic…," 25-26.

[142] *Ibid*.

[143] *Ibid*.

As for OPP, analysis of it and its peer processes have been light on praise and heavy on critique. This observation should not be misconstrued to mean that OPP is an abject failure. Rather, it is representative of the opinion of a few writers who, with or without OPP experience, have proposed the concept of SOD as a possible alternative. Their proposals have led to healthy debate, and it is through debate that doctrine evolves. It is the means by which doctrine is "continuously modified until such time as it is deemed no longer relevant at which point, hopefully, it is discarded."[144]

Universalizability

Coalitions and alliances are the major vehicles through which policy is enacted in the COE. Military forces and the headquarters that enable the command and control of them, are representative of the nations that contribute to the effort. Decision making processes must, therefore, be amenable to multinational staffs. Moreover, they must enable staffs of varying levels of knowledge and experience, to support commanders who themselves come with varying levels of capability and who must operate within unfamiliar environments. True, general knowledge of an environment will grow as a mission matures, but amongst the individuals employed within the environment, understanding will be limited both as a result of short term tours and the dynamics of the COE that render a situation wholly or partially changed in a short time frame. This process must therefore be understandable across multiple cultural divides. OPP has proven to fulfill this requirement, whereas SOD was not even understood by those for whom it was developed. Through shared understanding, OPP enables diverse staffs to function as a team, and to solve complex problems.

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[144] Patrick McGlade, "Effects-Based Operations Versus Systemic…," 4.

Colonel William Reitzel wrote in *Background to Decision Making* that the regular use of formulas "make it possible for a wide variation in human competence to be reduced to a reliable common denominator."[145] Decades of training and the development of interoperability have made OPP that common denominator. That is not to say that the process cannot change, rather it is to say that it is necessary to ensure that partners and allies change in step with one another or risk losing interoperability.

For the minor partners of what Colonel John Vance calls "contribution warfare" to ensure that their national interests are met within the broad context of those interests articulated by a coalition, they must ensure they are well represented within the headquarters responsible for translating strategy into action at the operational and tactical level.[146] The officers and NCOs thus embedded must be capable of participating in the decision making process and therefore must be well versed in it. To do otherwise would be to cause them to be relegated to the sidelines where their nation's best interests would be left in the hands of other coalition members. So, while the investigation of alternative decision making processes is the professionally responsible thing to do, it would be counter productive to the attainment of national interests within a coalition framework to adopt a system that would preclude active staff and commander participation in existing processes. To work with the best against the best, therefore, means to be interoperable. To be interoperable, minor partners are generally required to adopt the processes of the major partners. Adoption of a non standard decision making process would be an error of great magnitude for nations that typically operate within a coalition.

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[145] William Reitzel, "Background to Decision Making…," 1.

[146] Colonel J.H. Vance, "Tactics Without Strategy…," 271.

Process Comprehensiveness

OPP provides a comprehensive approach to campaign design and planning though, as we shall see, not perhaps as comprehensive as it could be. SOD, on the other hand, has some real strength, but its major weakness precludes comprehensiveness. Strengths of SOD "include its breadth of consideration in framing the situation, its application of systems theory ideas, its stress on the provisional nature of conclusions, and its call for continuous learning and adjustment of the concept."[147] There is an inordinate amount of time spent on defining the battle space, the actors within it and the links between the actors found within it. This is particularly important if you agree in the premise of systems theory; that the actors within the battle space form parts of an interrelated system, and that each part of the system will act differently if isolated from that environment, or from other parts of that system. To operate within that system as an intervention force is to become a part of it. Any influence injected into it will induce change, and therefore necessitate a continuous process of adaptation; hence the necessity of sometimes having to "conduct operations to learn more or to develop the situation" in a process of deliberate learning that stresses the "necessity of reviewing assumptions and solutions throughout a campaign."[148] In this regard, SOD would seem to be quite comprehensive, more so than perhaps Stage 2 of the OPP. This strength, though, is offset by its weakness at the far end of the cycle in which the indecipherable language of forms of function make the concluding steps, in the opinion of Lieutenant General Don Holder,

[147] Lieutenant General (Retired) Don Holder in an email exchange with the author 25 March 2008.

[148] *Ibid*.

"seem vague and so ethereal as to be unusable."[149] Indeed, a lack of clarity is precisely the complaint of Israeli officers on the receiving end of orders derived of a doctrine founded on SOD. That practitioners of a homegrown concept were unable to understand the language of their process, speaks volumes about its inutility as a process to be employed amongst the multiple nations of a coalition.

The Doctrine Versus Dogma Debate

OPP and its JIPB component are complicated analytical tools. As such, they are articulated in doctrine in a manner that is mechanistic and gives an unfamiliar reader the impression that they are process driven and inflexible tools that are; therefore, not suitable to any fast-paced operational environment, let alone the complex and dynamic asymmetrical environment that is the COE. Most critiques of OPP consider this to be the case, and they quite unanimously assert that the process fails to involve a commander sufficiently enough to take advantage of his superior experience, knowledge, and judgment. Further, they assert that staffs conduct component parts of the analysis in isolation of one another and without much in the way of opportunity to coordinate up, down, and laterally within the chain of command. To believe that to be the case is to fail to understand the doctrine on many counts.

First, doctrine is a guide and not meant to be dogmatically and slavishly followed as it is articulated. Second, the doctrine is of sufficient detail that in order to get it down on paper it comes across as linear and inflexible, as though it is neither an iterative or spiral process. Again, only failure to comprehend the process could drive one to develop that belief. Use of the process is determined by many factors: the nature of the conflict, adversary, and environment; the construct of the coalition; the capability of the staff; the

[149] Lieutenant General (Retired) Don Holder in an email exchange with the author 25 March 2008.

desired methodology of the commander; and finally familiarity with the situation. These factors will define how the process is used, how many COAs are developed, and what steps will be shortened, or removed. They will determine just how involved a commander becomes in the process. Finally, discourse, or "disputation" as Lieutenant General Don Holder describes it, is not unique to SOD.[150] Commanders and staffs engage in discourse continuously, though, perhaps not as energetically as the Israeli's prefer to do it.[151] In the end, OPP is a tool to be used as required in a given situation with the circumstances that are peculiar to it. To be that flexible requires that those who would be involved in the process are conversant with it in its entirety.

So, for SOD at least, while there is much praise of it from a theoretical perspective, it has not been proven on operations the likes of which were fully evolved in the middle part of the spectrum of conflict in which the unconventional and conventional tactics of Hezbollah were blended. Indeed, it has not yet evolved and matured as a doctrine. OPP, on the other hand, continues to be employed in the COE, and while there are critiques, there have been no outright failures, nor has SOD or any other process been demonstrated to be of greater utility. In terms of the criteria employed to comparatively analyze the two processes, OPP has and continues to be employed across the spectrum of conflict. The same cannot be said for SOD; not because SOD is unworkable across the spectrum, but that it has not yet been proven capable of it.

While OPP was developed for the conventional battle and has been adapted for the unconventional battle, SOD was developed for the unconventional battle and has not

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[150] Lieutenant General (Retired) Don Holder in an email exchange with the author 25 March 2008.

[151] *Ibid*.

yet been effectively employed in either that capacity or the conventional capacity. With respect to the second criteria, it would take exceptional effort to educate commanders and their multinational staffs of multiple nationalities in the employment of another decision making process. Not that this should not be done, rather it is recognition that to undertake that initiative, the process to be adapted would have to be quite mature and cross culturally understandable. Indeed, while some would propose that there should be a number of decision-making tools available to a commander, it may be too much to ask multinational staffs to be conversant with more than one. Nor can any one nation afford to go it alone as the nature of contribution warfare is such that the only means by which a minor nation can seek to shape its national interests is by shaping the manner in which its forces are employed within that coalition. As such it is necessary that its staffs are capable of employing the decision making process of the major contributing powers. Finally, SOD lacks comprehensiveness as a process as it does not manifest itself into a plan that is easily understood. There is no point understanding the problem so well if there is no means by which to undertake action effectively. There may however be potential for a hybrid solution.

A Hybrid Solution

> *When we talk about analytic versus intuitive decision making, neither is good or bad. What is bad is if you use either of them in an inappropriate circumstance*.[152]

OPP is employed throughout the levels of warfare, from the strategic, through operational, to the tactical. The process unifies language, fosters common understanding, and enables unity of effort throughout the chain of command. It has been, and continues

[152] Malcolm Gladwell, *Blink…,* 144.

to be, employed in both conventional and unconventional battles. It is not, however, without weakness; the primary being development of understanding of the adversary.

SOD, on the other hand, has not proven to be effective across the spectrum of conflict. Its language is confusing, and its end process does not articulate a plan of action well. There would however seem to be a universal consensus on its utility for problem definition; the very shortfall of OPP.

In the complexities of the COE, with many interrelated component parts, if you don't win the right way, you lose. To win the right way, commanders must fully understand the multitude of agendas resident within the many actors of the system within which an adversary is resident. He must understand the impact of his actions, and the many orders of effects they will have within the adversary's system. Commanders must ultimately undertake actions that shape operational outcomes in a manner that will achieve the endstate desired by the strategic sponsor. To do so, it would seem reasonable to adopt the Rival as Rationale discourse. Replacing Stage 2 of OPP which includes mission analysis and the first three steps of JIPB, would have a number of benefits. First, it would apply a methodology to understand an adversary that is optimized for the COE; one that must be viewed in terms of its relation with all of the elements of the system in which it is resident. Second, it would align the language of SOD with that of OPP, a process that is used across the three levels of warfare and therefore conducive to understanding at all levels. Next, it would minimize the massive effect of doctrinal and cultural change that would be necessary should an entirely new process be adopted. Not that this should preclude that from occurring where a superior process is developed. Finally, it will provide a forum in which representatives of other government

departments, working in conjunction with military forces in a whole of government approach, can actively participate in campaign design and planning, given a language that is understandable to them.

CHAPTER 6 – CONCLUSION

> *Given the nature of the subject, we must remind ourselves that it is simply not possible to construct a model for the art of war that can serve as scaffolding on which the commander can rely for support at any time. Whenever he has to fall back on his innate talent, he will find himself outside the model and in conflict with it; no matter how versatile the code, the situation will always lead to the consequences we have already alluded to: talent and genius operate outside the rules, and theory conflicts with practice.* [153]
>
> - Carl von Clausewitz, *On War*, 1832

At the end of the Cold War there was a euphoric belief that conflict would be a thing of the past. States that had driven their economies into deficit in the arms race, sought to cash in their peace dividend. Defence budgets were cut, major acquisition projects were cancelled and forces were reduced. This feeling of euphoria proved to be short lived. Just as was the case after every major conflict in the 20th Century, when nations were embarked upon troop and expenditure reductions, a new threat to security emerged. It was that of the failed and failing state. Where the bipolar world of the Cold War had kept these states together previously, the sudden loss of the funding they had used to covet support caused governments to fail. With their failure came a loss of the ability to retain control over the employment of violence and to police their own borders. NSA emerged to play an increasingly large role within their states, the regions within which their states belong, and internationally. NSA are not bound by the normal conventions of international law, nor do they typically fight conventionally. Instead, they fight an asymmetric battle to pit their strengths against conventional forces weaknesses. They use crime, terrorism, guerilla warfare, and on occasion conventional tactics to achieve their ends. Such is the reality in what has come to be called the COE.

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[153] Carl von Clausewitz, *On War*, ed. and trans. Micheal Howard and Peter Paret. (Princeton: Princeton University Press, 1976), 132.

Chapter 2 explored the COE and determined that forces operating within it would be faced with operations across the spectrum of conflict, necessitating the conduct of major combat operations, COIN operations, PSO and peacetime military engagement. They would require a structure that would enable them to undertake these operations simultaneously within a theatre of operations, or in close sequential order. The structure best suited to this was identified as the conventional structure of military forces, albeit with some enhancements to certain elements of it so as to meet an increased focus at the medium and low end levels of conflict. There would seem to be little in the way of contradiction to that view, given the manner in which conflicts within the COE have evolved over the past 15 plus years.

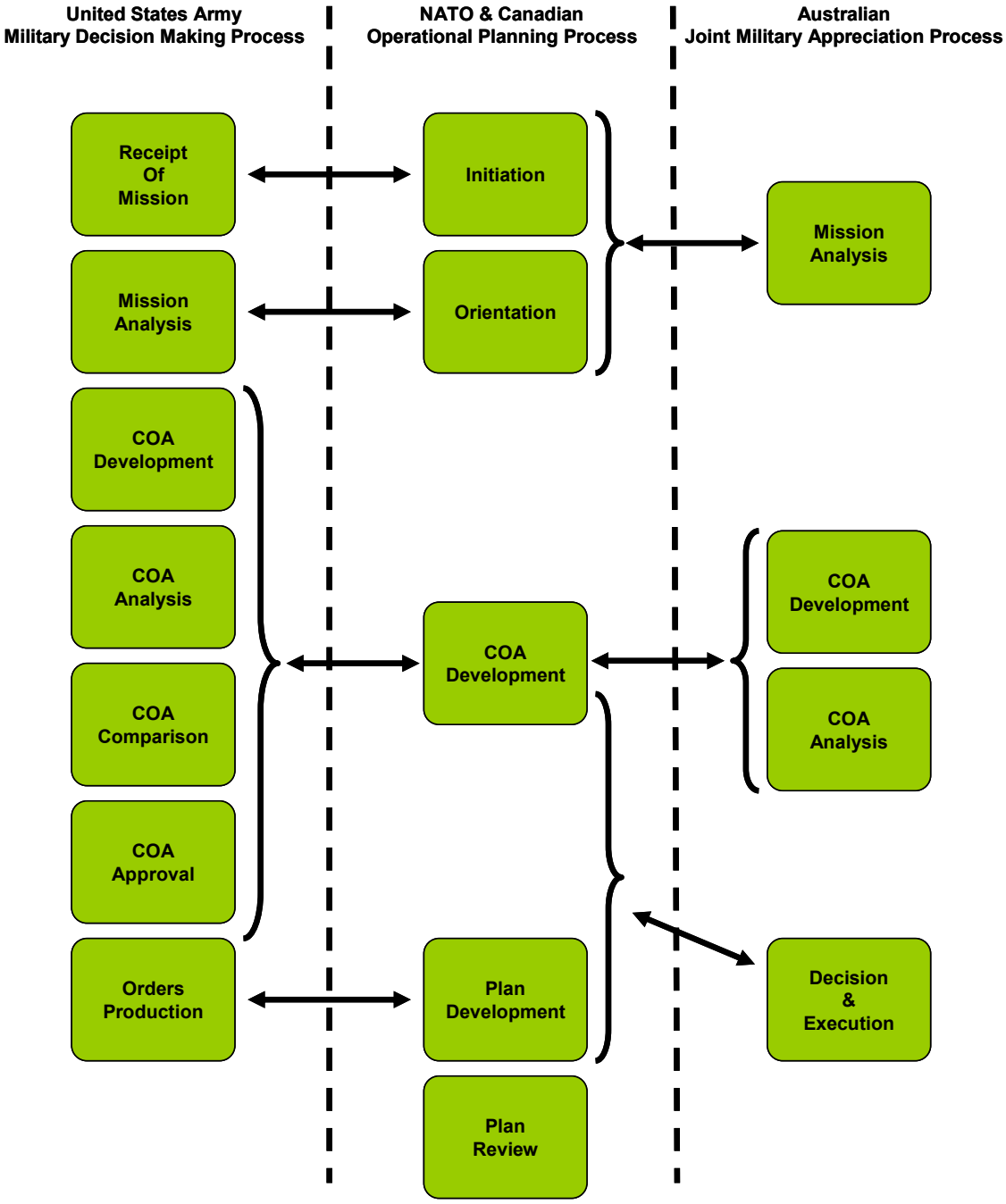
There is an increasingly vocal debate regarding the planning process employed by conventional forces. Whether it should be altered from the existing analytical process of OPP, to a naturalistic and intuitive decision making process like SOD has been a question of great deliberation amongst practitioners of the operational art, and defence scientists. The intent of this paper therefore, was to comparatively analyze the OPP and the Israeli developed SOD.

OPP has been used as an aid to decision making both conventionally and unconventionally. It has proven to be a useful tool for inexperienced decision makers and their staffs, to be the common denominator amongst the disparate staffs that exist within the coalition context, and to enable understanding of complex environments whilst generating effective plans to operate within that environment. While OPP has been critiqued as being deficient in some areas, many were resultant of a lack of understanding of the process rather than a fault with the process itself. It does have one major limitation

though. Stage 2, orientation, is an analytical approach to understanding an adversary, an approach that seems to be almost universally regarded as lacking in the case of complex, dynamic adversaries in the COE.

SOD on the other hand has not evolved from the conceptual stage sufficiently to be utilized as doctrine. The one attempt to use the process as a doctrinal foundation proved a failure; not so much because of the process, but as a result of how that process was implemented. It does have one strong point that would seem developed sufficiently to evolve into doctrine. The manner, in which the concept is employed to understand an adversary, is quite strongly argued to be superior to an analytical approach. The use of systems theory, a theory upon which SOD is partially based, is seen to be a far greater tool to understand the enemy. If doctrine is truly a living thing, incorporation of this element of SOD ought to be considered for stage 2 of OPP. In that manner the strengths of the two will be merged into a hybrid version of OPP to maximize its utility in the COE.

APPENDIX 1 – ANALYTICAL MILITARY DECISION MAKING PROCESSES COMPARED



This figure depicts the similarities in the analytical planning processes of NATO, Canada, Australia, and the United States Army. Essentially, the same process is used, the difference is in how they are broken down into steps, or stages. For example, Stage 3 of the NATO and Canadian OPP is broken down into four distinct steps in the U.S. Army's MDMP, and into two steps in the Australian JMAP.

APPENDIX 2 – LIST OF ABBREVIATIONS

COA	Course of Action
COE	Contemporary Operating Environment
COIN	Counter Insurgency
CPG	Commander's Planning Guidance
GOP	Guidance for Operational Planning
IDF	Israeli Defense Force
JIPB	Joint Intelligence Preparation of the Battlespace
JMAP	Joint Military Appreciation Process
JOPG	Joint Operational Planning Group
LOAC	Law of Armed Conflict
MDMP	Military Decision Making Process
NATO	North Atlantic Treaty Organization
NGO	Non Governmental Organization
NSA	Non State Actor
OPP	Operational Planning Process
OTRI	Operational Theory Research Institute
PSO	Peace Support Operations
SAMS	School of Advanced Military Studies
SOD	Systemic Operational Design

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