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14. ABSTRACT Clausewitz tells us that war is like business and the duel between two rivals is for supremacy. Understanding that war and business are non-linear systems or complex problems, simple solutions are not the answer. Businesses, both local and multi-national, utilize strategic management tools (SMTs) to identify their rival's strengths and weaknesses, their industry's potential growth, and the market's ability to accept another product or produce acceptable returns on investment. Businesses face similar uncertainty in their analysis of the markets they participate, their "battlefield." Utilizing business strategic management tools will provide better clarity in understanding our rivals in the current operating environment versus solely using Center of Gravity (COG) analysis. The shared context between war and business will provide a new perspective in how the military identifies problems and root causes. It may also allow the military to identify potentially undesirable second and third order effects. The utilization of SMTs are not to replace COG analysis, but assist in helping define the problems and help develop CCs, CRs and CVs both friendly and enemy.					
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United States Marine Corps
Command and Staff College
Marine Corps University
2076 South Street
Marine Corps Combat Development Command
Quantico, Virginia 22134-5068

MASTER OF MILITARY STUDIES

TITLE:

Alternatives to Center of Gravity Analysis

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AUTHOR:

Major Henry Kayser, USMC

AY 12-13

Mentor and Oral Defense Committee Member: Christopher Harmon

Approved: HARMON, C

Date: 5 April 2013

Oral Defense Committee Member: Rebecca Johnson

Approved: R

Date: 4 April 2013

MATT BRYAN
M.B. 4/4/13

J.J. TUBA
J.J. Tuba 4 APR 2013

Executive Summary

Title: Alternatives to Center of Gravity Analysis

Author: Major Henry Kayser, United States Marine Corps

Thesis: Strategic Management Tools can be used to provide alternatives to center of gravity (COG) analysis in defining the numerous aspects of our rival's surfaces and gaps.

Discussion: War and business share traits, the most significant being that each is a non-linear system that is unpredictable. These commonalities allow for business strategic management tools (SMTs) to help shape COG analysis. The use of SMTs is not to replace COG analysis, but assist in helping to define the problems and refine the development of critical capabilities (CCs), critical requirements (CRs), and critical vulnerabilities (CVs) both friendly and enemy. Providing different perspectives and considerations, SMTs help to better define the problem and the links between various aspects of the problem. SMTs have applicability across the range of military operations (ROMO), but will be most useful in situations where the military component of the problem is minimal or zero. Both external (enemy or rival and international organizations) and internal (self-examination and alliances) environment analysis tools discuss the opportunity to determine the problems and root causes within the paper.

Conclusion: Clausewitz illustrates that war is like business and the duel between two rivals is for supremacy. Understanding that both war and business are non-linear systems or complex problems, simple solutions are not the answer. The commonalities between war and business allow one to share best practices and lessons learned between the two somewhat opposite fields. It also allows for a shared context and perspective in how to visualize the problem. This shared context will provide a new perspective in how the military distinguishes problems and potential root causes. It may also allow the military to identify potentially undesirable second and third order effects. The utilization of Strategic Management Tools within the Problem Framing step further defines the COG and allows scarce resources to be applied against the true critical vulnerabilities.

Recommendations

The Marine Corps Training and Education Command needs to develop the processes necessary to utilize SMTs to feed COG analysis. A separate consolidated effort to develop a streamlined process incorporating SMTs in the Marine Corps Planning Process will provide planners with an understanding on how to use SMTs and which SMTs provide the greatest benefit in certain situations.

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Preface

The US military has been in unconventional conflicts for the past decade. War is a non-linear problem for which we continue to try to shoehorn a linear solution. Planners, the majority of the time, over-simplify or misinterpret the situation dynamics causing miscalculations when involving culture, social issues, and economics.

Businesses face many of the same issues in the global marketplace. They address these situations differently, but more importantly businesses address and mitigate these issues through the utilization of strategic management tools. The US military should be able to do the same. Using business strategic management tools will help the military identify issues and CRs-CCs-CVs to mitigate or neutralize the COG.

While studying for my MBA, I felt that the strategic management tools I was using had applicability in the Marine Corps Planning Process to better define the problems. I also felt that if businesses use these tools to identify opportunities and options in varying markets and countries that there would have to be some applicability for the military in unconventional warfare.

I would like to thank the Horner Chair of Military Theory Dr. Christopher C. Harmon and Dr. Rebecca Johnson for their mentorship of this paper. A special thanks goes to Dr. Tricia Stauber for her thorough and swift review of the paper for business concepts. I would also like to thank Colonel Michael Shupp, USMC (Ret.), Nicole Nollette, and Eugene Brown for their support in entertaining my numerous questions concerning business tools they employ at their jobs. My wife and kids deserve a special thanks for keeping me well-grounded and focused on the endstate.

Alternatives to Center of Gravity Analysis

Introduction

Carl von Clausewitz (1780-1831), who attained the rank of Major-General in the Prussian Army, authored one of the Western World's greatest military treatises, *On War*. In it, Clausewitz discusses numerous strategic and operational concepts that the Western World has built a current framework of strategic and operational design on. Some of those concepts are as controversial today as they were almost 200 years ago.

One of the more controversial concepts is the use of the Center of Gravity (COG) theory in current military doctrine. Clausewitz defines the center of gravity as "the hub of all power and movement, on which everything depends. That is the point against which all our energies should be directed."¹ Clausewitz does not prescribe the process of how to find the enemy's center of gravity, but mentions that there could be one or more and if possible, the commander should reduce the centers of gravity number to one.² In current military affairs, some military members and academics believe Clausewitz's Center of Gravity theory is no longer valid due to the change in the character of war and technological advancements that provide extended battlefields.³

Clausewitz's COG theory remains valid for warfare. It is basic enough to allow the commander to identify the center of gravity and apply resources to affect the enemy's center of gravity. It was not until 1996 when Dr. Joe Strange in his monograph, *Centers of Gravity & Critical Vulnerabilities: Building on the Clausewitzian Foundation So That We Can All Speak the Same Language* develops a prescriptive way to identify the center of gravity through the analysis of critical factors. Those critical factors are: critical capabilities (CC)-primary abilities that would prevent us from accomplishing our mission, critical requirements (CR)-conditions

and resources for a CC to be fully operative, and critical vulnerabilities (CV)-“CRs which are deficient or vulnerable to neutralization, interdiction or attack.”⁴ Dr. Strange articulates Clausewitz’s COG theory into COG analysis.

Doctrinal publications direct the use of COG analysis, but the COG analysis may not always reach its fullest potential due to a lack of Subject Matter Experts (SMEs) or misapplication of the analysis process.⁵ Even if done correctly, the COG analysis may not uncover or identify all the potential problems, issues, or concerns that could appear before, during, or after combat operations. As MCWP 5-1 states, “the environment is dynamic, problems also evolve” and constant evaluation “must occur throughout planning, execution, and assessment.”⁶

Stating that war is similar to business, Clausewitz allows us to recognize our current context of war and adjusts our perception of those same problems, issues, and concerns through a prism of business.⁷ Instead of aggressors or combatants, we will use the term rivals. The commander’s (and staff’s) desire to better understand a rival, his objectives, means, overall endstate, surfaces (strength), and gaps (weakness) has always been an unfulfilled requirement. Businesses, both local and multi-national, utilize strategic management tools (SMTs) to identify their rivals’ strengths and weaknesses, their industry’s potential growth, and the market’s ability to accept another product or produce acceptable returns on investment. Businesses face similar uncertainty in their analysis of the markets they participate, their “battlefield.” Would utilizing business strategic management tools provide better clarity in understanding our rivals in the current operating environment versus using Center of Gravity (COG) analysis solely? This paper will provide alternatives to define the numerous aspects of our rival’s surfaces and gaps, not to replace COG analysis, but to assist in defining the problems and refining the development

of CCs, CRs, and CVs both friendly and enemy. Not all the SMTs to be discussed are applicable at every level of war or in every situation. SMTs are business tools and rely on accepted norms of the business world, ones that focus on non-combat activities.

This paper will discuss the similarities between war and business as Clausewitz alludes to in *On War*, provide a definition of the two means to analyze COG analysis, compare and contrast current COG analysis and business strategic management tools, and provide alternatives to define the numerous aspects of our rival's objectives, means, overall endstate, surfaces, and gaps. To provide a basis of understanding and further the discussion, the assumptions are:

1. The military and business worlds are imperfect, but best practices should be exchanged;
2. The nature of war is immutable, but the character of war changes;
3. In character, war is similar to business or business is similar to war;
4. Like business, the nature of war is a non-linear system or a complex or wicked problem;
5. Conducting a COG analysis is not only doctrinally directed but adds value; and,
6. COGs (notice plural) exist at the strategic, operational, and tactical levels.

Background

There are numerous well-written publications from authors such as Joe Strange and Richard Iron, Milo Vego, Michael Handel, Hew Strachan, Jon Sumida, Dale Eikmeier, Antulio Echevarria, Alan Beyerchen, Christopher Bassford, and Beatrice Heuser that have expounded on Clausewitz's writings, the meaning of COG theory, intentions, and how *On War* was translated.⁸ My intent is not to refute any of those authors or writings, but use the understanding/meaning of COG analysis as the basis for furthering this discussion. Translated by Michael Howard and Pete Paret, Clausewitz defines the center of gravity as "the hub of all power and movement, on which everything depends. That is the point against which all our energies should be directed."⁹ Successful commanders (and staffs) have been able to identify the environment, situation, and enemy's surfaces and gaps to apply resources. An excellent example is during the Korean War, GEN MacArthur correctly identified the transportation and logistics hub in Seoul as North

Korea's critical vulnerability. The retaking of Seoul via the Inchon Amphibious Landing prevented the movement of supplies and reinforcements from the north to the battlefield and was crucial in breaking the North Korean assault on the peninsula. GEN MacArthur's fortitude in pursuing this course of action, specifically the landing at Inchon and not somewhere else, was the driving factor in turning the North Koreans back north. Not only was the Inchon Landing the priority of effort, but it was also appropriately resourced by MacArthur to allow for the overall endstate to be achieved, the retaking of Seoul.¹⁰ The definition of Center of Gravity I will use is that of focus of effort.¹¹ The intent is to identify the "thing" in which to allocate our resources, indifferent to the school of thought one may subscribe too; i.e. strength, weakness, neither, moral, physical.

Marine Corps Warfighting Publication (MCWP) 5-1 *Marine Corps Planning Process* (MCP) clearly identifies in its first step, Problem Framing, the necessity to conduct Centers of Gravity analysis.¹² The task to analyze Centers of Gravity is explicitly assigned in MCWP 5-1 to the Staff and is considered by MCWP 5-1 to be one of the main activities and a major output of the Problem Framing step.¹³ There are similar requirements in Joint Publication 5-0 *Joint Operation Planning*. Developing a COG analysis can provide clarity of objectives and a means in which to reach those objectives (methods). By using Strange's COG-CC-CR-CV (or Eikmeier's Ends-Ways-Means) process, a concept of what is important to your rival allows him to think he has a competitive advantage. Identifying the COG and then analyzing the critical factors (CC-CR-CV) allows you to apply resources against those CVs. Table 1, demonstrates the Iraqi COG during OPERATION DESERT STORM at the strategic, operational, and tactical levels of war.

<i>Level of War</i>	<i>Coalition example missions</i>	<i>Example opposing Iraq CG</i>	<i>Why it's a CG</i>
(a)	(b)	(c)	(d)
Strategic Level			
• National Policy →	Restore the legitimate Government of Kuwait.	Saddam Hussein	Can maintain popular support and direct the Iraqi Army to hold Kuwait against international condemnation and coercion. Can defend occupied Kuwait against Coalition attack.
• Theater Strategy →	Defeat the Iraqi Army south of Euphrates.	Iraqi Army	
Operational Level			
• Campaigns →	Isolate and encircle the Iraqi Army in Kuwait.	Republican Guard	Can prevent encirclement of Iraqi Army defending Kuwait.
• Major Operations →	Cut communications from Baghdad to Kuwait.	Iraqi integrated air defence system	Can prevent freedom of action of Coalition air through high attrition of allied aircraft.
Tactical Level			
• Battles →	Penetrate the Iraqi defences along the Saudi border.	Iraqi 12 th Corps	Can prevent VII Corps penetration of Iraqi linear defences using fixed defensive positions.
• Engagements →	Defeat Tawakalna Division on 73 Easting.	Tawakalna Division reserve Tank battalion. Iraqi defensive bunker complex.	Can counter attack and defeat elements of VII Corps attacking Tawakalna Division.
• Small unit actions →	Breach element of Iraqi defensive line.		Can defeat breaching attempt through use of direct fire weapons.

Table 1. Levels of War and Iraqi Centers of Gravity 1991

Source: Joe Strange and Richard Iron, *Understanding Centers Of Gravity And Critical Vulnerabilities Part 2: The CG-CC-CR-CV Construct: A Useful Tool to Understand and Analyze the Relationship between Centers of Gravity and their Critical Vulnerabilities*, 4, www.au.af.mil/au/awc/awcgate/usmc/cog2.pdf.

If accurate, the COG analysis allows a commander to allocate the appropriate resources to bear on the enemy, bringing the adversary to bended knee sooner rather than later.

OPERATION DESERT STORM's duration was an unprecedented six weeks due to the identification of the COGs (and CVs) and then application of resources to that COG. If inaccurate or conducted with numerous assumptions, the COG analysis could misidentify objectives and methods to subdue the adversary. An example of misapplication of COG analysis is the bombing campaign in Kosovo during the early part of 1999 when the focus was on strictly military targets. The outcome was sub-optimal requiring a refinement and adjustment to the COG analysis for better targets.¹⁴

The actual act of developing a COG analysis can be an extremely painful process. Dr. Strange observes that the

rather confusing definition (of COG and those of CC, CR, and CV) encourages the current situation where it is rare when a group of people can readily or easily agree on a center of gravity. The definition is so open to interpretation that military analysts can view the same situation in a variety of different ways in the search for the center of gravity. Many hours are thereby wasted in fruitless discussion and argument; hours that could be better spent on planning.¹⁵

The development of a COG depends largely on the group developing the analysis and their individual views of the situation, environment and directed tasks. To assist in the development of a COG analysis, there are two general ways in which to define the Center of Gravity.

The first way was developed originally by Dr. Joe Strange while an instructor at the Marine Corps University. His original and subsequent work with Colonel Iron, UK Army defines the Centers of Gravity by analyzing them through three sub-components: Critical Capabilities (CC), Critical Requirements (CR), and Critical Vulnerabilities (CV). Dr. Strange's work remains the basis for United States Marine Corps and Joint doctrine.

Joint Publication 5-0 (JP 5-0) *Joint Operation Planning* states:

A COG is a source of power that provides moral or physical strength, freedom of action, or will to act.... An objective is always linked to a COG. There may also be different COGs at different levels, but they should be nested. At the strategic level, a COG could be a military force, an alliance, political or military leaders, a set of critical capabilities or functions, or national will. At the operational level, a COG often is associated with the adversary's military capabilities—such as a powerful element of the armed forces—but could include other capabilities in the operational environment.¹⁶

JP 5-0 goes on to define critical capabilities (CC) as “those that are considered crucial enablers for a COG to function as such, and are essential to the accomplishment of the adversary's assumed objective(s).”¹⁷ Strange & Iron effectively reduce CC to “what can this center of gravity do to you that puts great fear (or concern) into your heart in the context of your mission and level of war? Within a critical capability, the key word is the verb: it can destroy something, or seize an objective, or prevent you from achieving a mission.”¹⁸ This differs from CRs. According to JP 5-0, “Critical requirements (CR) are the conditions, resources, and means that enable a critical capability to become fully operational.”¹⁹ Strange & Iron provide further clarification of CRs in the form of examples:

- Good weather, precise intelligence, fuel and ammo re-supply, chemical gear, ability to go 35mph across open desert for 6 hours.
- Force X must accomplish its mission as a precondition before force Y can accomplish its mission.
- A robust sea train for a warfighting fleet operating long periods at sea.
- Political leader Y needs no less than X% popular support.
- International support for a given U.S. military operation to provide political credibility, regardless of overwhelming U.S. military superiority over country Y.²⁰

Working our way from the larger concept and definition of COG, planners divide into the secondary level of CCs and then further sub-divide the CCs to a tertiary level of CRs. The CRs are split into a quaternary level of CVs. “Critical vulnerabilities (CV) are those aspects or components of critical requirements that are deficient or vulnerable to direct or indirect attack in a manner achieving decisive or significant results.”²¹ A graphic representation of the COG-CC-CR-CV Model is Figure 1. Notice that there are one or two critical vulnerabilities under each critical requirement and three critical requirements per critical capability. This is an example of a graphical representation only as there can be numerous CVs and CRs per CC. A determination therefore needs to be made as to which of the CVs is more important, are linked or shared with another CR, and prioritize resource availability to affect the CV.

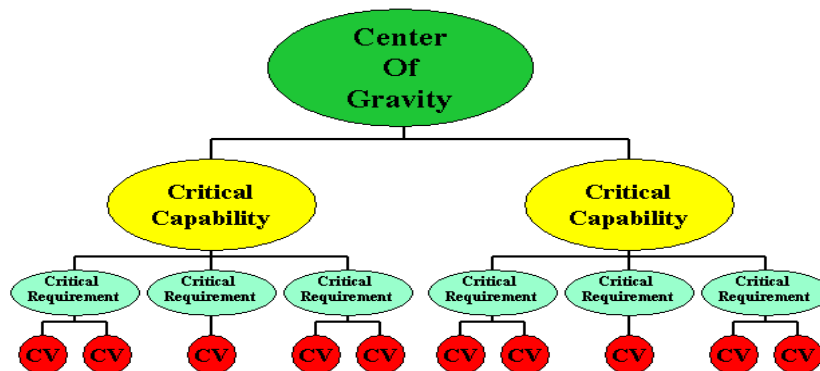


Figure 1. Graphic Representation of Strange’s COG-CC-CR-CV Model.
 Source: Darren F. Anding, “Center of Gravity and the Range of Military Operations: Can an Old Dog Apply To New Tricks,” (master’s thesis, Naval War College, 2007), 7, www.dtic.mil/dtic/tr/fulltext/u2/a476441.pdf.

The second way to conduct a COG analysis was developed by COL Dale Eikmeier, USA (ret.) while an instructor at the U.S. Army War College. His original work defines the Centers of Gravity by analyzing them through ends, ways, and means. COL Eikmeier writes:

Identifying the ends and the ways they may be achieved determines the means required (although in short-term strategies or crisis planning, the means currently available may determine the ways and ends). The ways of a strategy are the essential determinants of a critical capability, and the means that possess that critical capability constitute the center of gravity. In other words, the ways determine the critical capability, which identifies the center of gravity. Linking the strategic framework (ends, ways, means) and COG analysis will greatly enhance military planning.²²

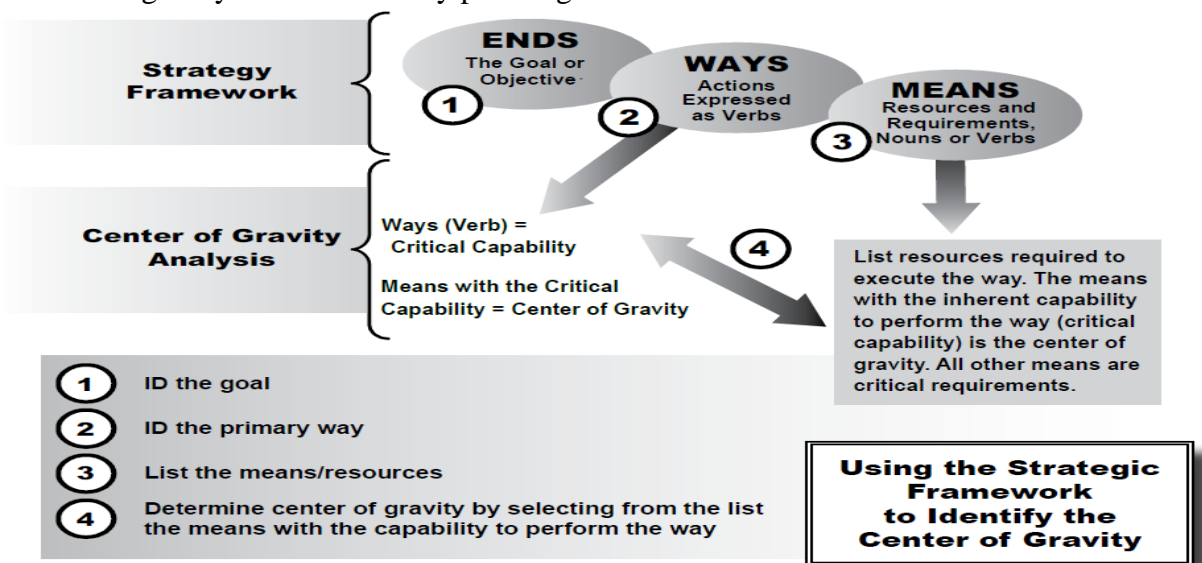


Figure 2. Graphic Representation of Eikmeier's Ends, Ways, Means Model

Source: Dale C. Eikmeier, "A Logical Method for CENTER-OF-GRAVITY ANALYSIS." *Military Review*, September-October 2007, p.62-66.

Strange & Iron's and Eikmeier's process demonstrate two separate ways in which to define the COG. Both methods of determining Centers of Gravity COG-CC-CR-CV or ends, ways, and means, should come up with the same result providing the original assumptions are consistent. There has not been any academic research to prove using Strange & Iron's and Eikmeier's processes produce deviating solutions.²³ Strange & Iron's and Eikmeier's process are just two ways to determine COGs. Their processes focus solely on achieving the military objective and because of that, lack an emphasis on the social and economic factors.²⁴ In

comparison, businesses look at numerous aspects of an environment capitalizing on the benefits of social and economic factors to gain a competitive advantage.

War and Business

In Book One, Chapter 1, Clausewitz begins his discussion of war with a comparison to a duel, more specifically wrestlers trying to “compel the other to do his will.”²⁵ Looking at his original comment, “War is nothing but a duel on a larger scale,” could one not replace war with business and have it seem commonplace?²⁶ Businesses compete locally and globally with one another on a daily basis. Whether it is market share, first to market, profitability, or unique savings, businesses are dueling with their rivals. Clausewitz recognizes this fact as he makes mention of business and commerce throughout *On War*.²⁷ Although Clausewitz makes the connection between war and business, he also makes a clear distinction in Book Two, Chapter 3, between war and other conflicts, like business, by saying war “is resolved by bloodshed.”²⁸ The endstate, the demise of personnel or physical destruction of property, is the major distinction between war and business.

Like war, business is a non-linear system (or a complex or wicked problem). Whether a small scale skirmish (e.g. Cambodia-Thailand border disputes) between two rivals or two rival eateries in a duel for lunch hour patronage (e.g. Five Guys vs. McDonalds), there are numerous factors involved on both sides of the conflict which make it complex. Unless the rivals can identify and address or mitigate multiple factors, their perceived solution will be sub-optimal wasting scarce resources, and most importantly time. The over-simplification of the above comparison demonstrates very clearly the link between war and business. In the Cambodia-Thailand border dispute example, religion, territory, historical significance, national prestige, cultural differences, and perceived injustices drive the actions and reactions of the rivals. The

fighting is over possession of religious shrines.²⁹ The use of military force is to establish a competitive advantage over one another in their competition for possession of the shrines. The Five Guys and McDonalds example is similar to the Cambodia-Thailand example in that Five Guys and McDonalds are fighting for competitive advantage of local markets. Five Guys and McDonalds are both fast food restaurants, but the way in which they decide which products to sell, how they sell their products, and the convenience of getting those products are different. These differences make the restaurants unique and this differentiation is their competitive advantage. The factors that compel someone to visit either chain might be based on convenience by location or whether or not there was a drive-thru, daily specials, customer loyalty cards, dietary menus, kids-in-tow, or sales price. It is the individual company's business principles or concepts that drive its view of what factors make them stand-out amongst their rivals.

War and business principles or concepts are more similar than different. The principles of war are generalities that remind the commander to reflect on his own experience and judge whether or not he has sufficient quality and quantity of the principles for battle, the art and genius Clausewitz mentions. The principles, when in proper quality and quantity, should provide the commander victory. The United States Military codifies the principles of war in U.S. Army Field Manual 3-0 Operations (FM 3-0). FM 3-0 defines the Principles of War:

OBJECTIVE	Direct every military operation toward a clearly defined, decisive, and attainable objective.
OFFENSIVE	Seize, retain, and exploit the initiative.
MASS	Concentrate the effects of combat power at the decisive place and time.
ECONOMY OF FORCE	Allocate minimum essential combat power to secondary efforts.
MANEUVER	Place the enemy in a disadvantageous position through the flexible application of combat power.
UNITY OF COMMAND	For every objective, ensure unity of effort under one responsible commander.

SECURITY	Never permit the enemy to acquire an unexpected advantage.
SURPRISE	Strike the enemy at a time or place or in a manner for which he is unprepared.
SIMPLICITY	Prepare clear, uncomplicated plans and clear, concise orders to ensure thorough understanding.
PERSEVERANCE	Ensure the commitment necessary to attain the national strategic end state.
LEGITIMACY	Develop and maintain the will necessary to attain the national strategic end state.
RESTRAINT	Limit collateral damage and prevent the unnecessary use of force. ³⁰

Originally, there were nine principles, the last three are recent additions. All these principles are a reminder to commanders (and staffs), at all levels, of the bare necessities to consider prior to the development of a plan. In comparison, each company has its own unique business principles that they deem most important. Businesses in the same sectors (e.g. manufacturing, energy, service, retail) may have partially or entirely similar principles. Royal Dutch Shell plc, better known as Shell, is a multi-national company with headquarters in the Netherlands and specializes in energy. McDonalds got its beginnings in San Bernardino County, California and is currently a multi-national company with headquarters in Oak Brook, Illinois. Looking across Table 2, there are similarities between Shell, McDonalds and FM 3-0. If war and business were not similar, then the principles and values on Shell's and McDonalds' websites would not relate to the Principles of War in FM 3-0. Since there are commonalities in the concepts as represented in Table 2, the use of strategic management tools to further analyze rival's COGs is valid.

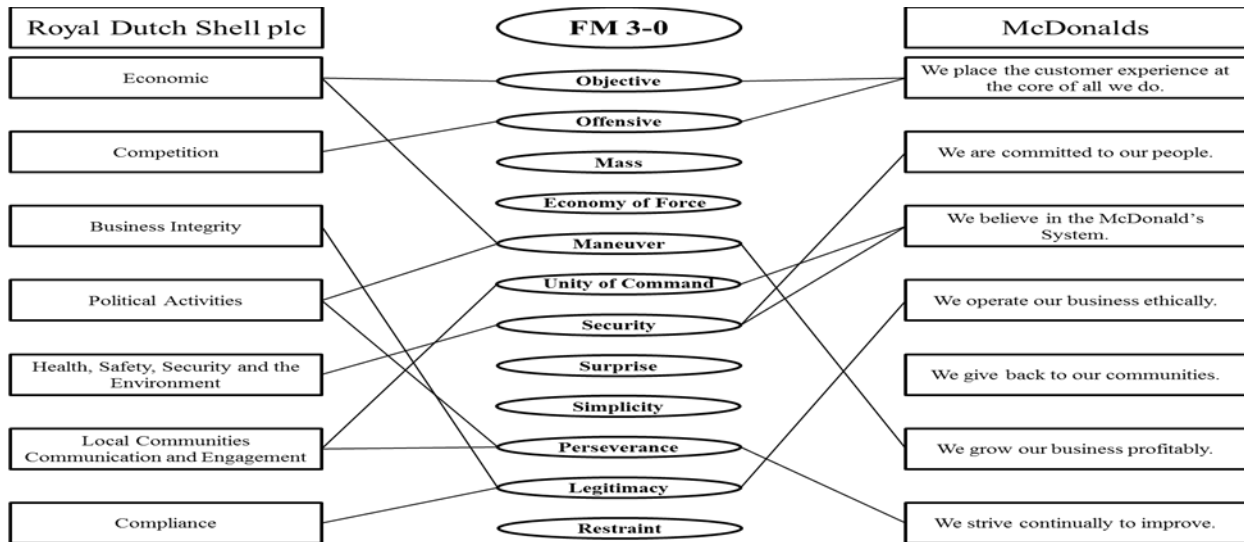


Table 2. Business Principles and FM 3-0 Principles of War

Source: Analysis and comparison done by the author using Shell General Business Principles, Royal Dutch Shell plc. <http://www.shell.com/global/aboutshell/who-we-are/our-values/sgbp.html>, U.S. Army Field Manual 3-0 Operations (FM 3-0), A-1-A-4, and Mission & Values, McDonalds. http://www.aboutmcdonalds.com/mcd/our_company/mission_and_values.html.

The concepts and principles of war and business are similar: two rivals dueling it out to overmatch each other for supremacy. Clausewitz makes the connection. The illustration of how closely Shell’s and McDonalds’ business principles relate to the principles of war demonstrates a closer correlation between business and war. This correlation permits alternative methods for searching for a rival’s (enemy’s) surfaces and gaps (strengths and weaknesses), specifically those methods that businesses like Shell and McDonalds would use.

COG Analysis and Strategic Management Tools

Business today is multi-faceted and multi-dimensional with all businesses in competition with local and global rivals. The complexity depends on the context of the participants. Politics both internal and external to the rivals and the involvement of Non-Governmental Organizations (NGOs) and World Organizations like the United Nations, European Union, Association of Southeast Asian Nations (ASEAN), G-8, and G-20 (to name a few) have a pronounced influence on business today for better or worse.³¹ Those politics are a driving factor for the use of military force to “compel our enemy to do our will.”³² Up to the point of and during the use of the

military, other options (diplomatic, economic and informational) remain viable. Economics is “a social science that studies how individuals, governments, firms and nations make choices on allocating scarce resources to satisfy their unlimited wants.”³³ Being a social science, economics is non-linear due to the human interaction. Different aspects of a business must contend with fluctuating markets, bonds, currencies, employee agreements, and must speculate to reduce the impact to profit and market share and strikes. Supply Chain Management must understand primary and secondary sources of supply to mitigate local shortages, raw material delays, earthquake-tsunami-nuclear incident disasters and increases in fuel prices.³⁴ Those examples only name a few factors influencing a business’ exposure to doing business, but address a litany of potential problems, issues and concerns. Nor does the example address the rival trying to steal customers, market share, profit, and maybe employees. The commander and staff defining the problem or identifying the precursors to the elements that generate those problems cannot be observed through a single lens, like logistics or manufacturing capability, and analysis must be via different means.

The commander’s and staff’s analysis of the problem, issue or concern needs to be multi-dimensional and not focus solely on military operations, objectives, or the desired endstate. The De-Nazification process while rebuilding Germany post WWII nearly shut down local government and services because everyone holding public jobs was part of the Nazi Party.³⁵ The De-Baathification process in Iraq post OIF produced the same phenomenon.³⁶ As a result, numerous military aged males without jobs, without the ability to support their family and with nothing else better to do join the insurgency.³⁷ The COG analysis developed and still employed (used) does not provide and still does not provide the identification of social and economic elements as they pertain to combat. In *Another Bloody Century*, Colin Gray makes the point that

the U.S. military is good at combat, but fails at warfare.³⁸ Gray implies the U.S. military's training and weapon systems acquisition is second to none. This allows for destruction or capitulation of the enemy in a quick manner as represented in OPERATION DESERT STORM and OPERATION IRAQ FREEDOM (2003-2004), but fails in the longer aspect of warfare as demonstrated in Vietnam.³⁹ It is not the combat that is lacking, but the implications of the "other" stuff, specifically social and economic factors that have caused the U.S. Military issues.

Strategic Management Tools

Business and war are similar. These similarities provide for the utilization of Strategic Management Tools (SMTs) to better define the COGs for military problems involving non-combat related issues. Businesses use SMTs for external and internal environment analysis to identify a basis for a company to recognize areas of opportunity, strategic options, and eventually metrics to gauge success. The use of a SMT vice the Strange & Iron or Eikmeier COG analysis supplies a different context to address the situation, by providing a different perspective that may provide benefit in the implementation of resources to the rival's CV. The utilization of SMTs would be in conjunction with COG analysis during Problem Framing. The examples of strategic management tools to follow are ones that I have a working knowledge of and feel comfortable discussing. These do not represent all strategic management tools.

External Environment Analysis

There are numerous SMTs that fall into two types; external environment analysis and internal environment analysis. The purpose of the external environment analysis is to identify what may impact the business and its operations. Some specifics are economic conditions, global forces, political, legislation, and regulations, demographics, natural environment, societal forces, and technology.⁴⁰ This also includes global tectonics or major global trends, corporate

social responsibility, and risk/uncertainty.⁴¹ Defining the overarching external environment leads one to further division by industry analysis. Industry analysis includes a description of the market, competitors, and regulations. Some of the tools of industry analysis are Michael Porter's Five-Forces Model of Competition, industry dynamics analysis, strategic group mapping, key success factors, opportunity attractiveness, the strategy canvas, and four actions framework. Porter's Five-Forces Model identifies the kinds of competitive forces industry members are facing. The stronger the competitive forces, the harder it is for industry members to earn attractive profits. The key is to shift competitive forces in a business' favor. Five-Forces Modeling analyzes the industry for: 1) the threat of new entrants, 2) bargaining power of customers, 3) the bargaining power of suppliers, 4) the threat of substitute products or services, and 5) the jockeying among current rivals.⁴² Analyzing industry dynamics allows the business to understand the industry's drivers of change. The analysis allows for an educated guess of strategic adjustments that impact the changes in industry conditions (Figure 3).⁴³ Porter's Five-Forces Model provides an excellent avenue into discussing a correlation to war. The use of the model to analyze each element of PMESII (political, military, economic, social, infrastructure, and information) would generate a more detailed picture of the situation allowing for initial patterns to be identified. One example is the impact of tribal factions in Al-Anbar, Iraq. The tribal factions were significant and at times hampered the security and rebuilding programs. By analyzing the dominant tribes within Al-Anbar and those leveraging for power, the personalities of the key leaders of those tribes, the tribes' affiliation with security forces, municipal, gubernatorial, and federal officials and agencies, Porter's Five-Forces Model would have identified relationships and linkages between various players. A Strange & Iron or Eikmeier COG analysis does not supply the same fidelity on those linkages, if at all.



Figure 3. Porter's Five-Forces Model of Competition

Source: Michael Porter's Five Forces Model of Competition retrieved from <http://business-fundas.com/2011/michael-porters-5-forces-model/> from Michael Porter, Competitive Strategy, 1980.

The next external environment analysis tool to discuss is strategic group maps (SGM). Strategic group maps are a mapping tool to cluster industry rivals “that have similar competitive approaches and market positions.”⁴⁴ Strategic group maps are helpful to assess the intensity of competition as well as the attractiveness of certain positions. Industry driving forces and competitive pressures favor different positions on the map.⁴⁵ “This confirms the closest competitors and clarifies that not all positions on the map are equally attractive. Price/quality, geographic coverage, degree of vertical integration, product line breadth (wide or narrow), use of distribution channels, and degree of service are the options suggested for a map.”⁴⁶ Some examples of strategic group maps are below as Figures 4, 5 and 6. The examples represent a relatively straightforward (Automotive Industry) concept to a detailed multi-variable (Caribbean Tourism) concept to a complex multi-variable (UK Pharmaceutical Industry) concept.

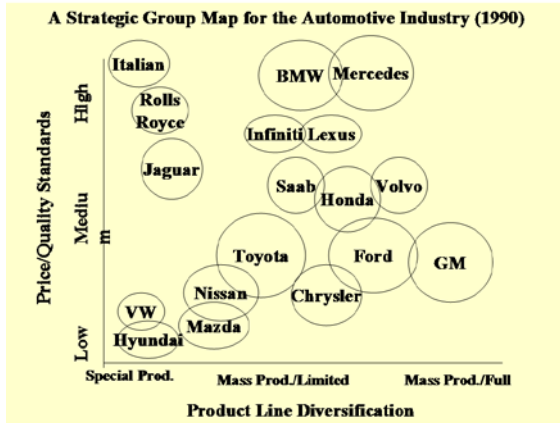


Figure 4. Automotive Industry SGM

Source: Strategic Group Map, http://ci.haifa.ac.il/images/b/ba/SGM_For_Automotive_Industry.png

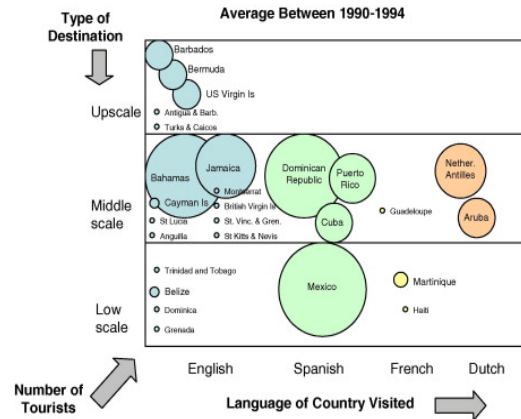


Figure 5. Caribbean Tourism SGM

Source: Art Padilla, Jerome L. McElroy, "Cuba and Caribbean tourism after Castro," *Annals of Tourism Research*, Volume 34, Issue 3, July 2007, Pages 649-672, 10.1016/j.annals.2007.02.004. <http://www.sciencedirect.com/science/article/pii/S0160738307000138>.

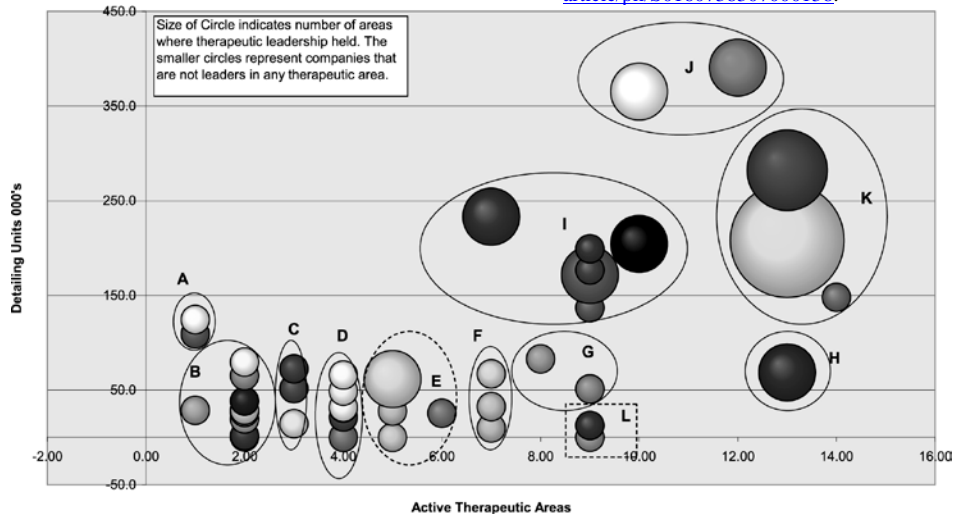


Figure 6. Companies Sales in the UK Pharmaceutical Industry SGM

Source: Graham Leask and David Parker, "Strategic group theory: review, examination and application in the UK pharmaceutical industry," *Journal of Management Development*, Vol. 25 Iss: 4, 2006, 386 – 408.

Using Porter’s Five-Forces Model of the Al-Anbar example, a SGM would help frame those tribal relationships. By comparing or overlaying the tribes, their influences and connections, a SGM would appear similar to Figure 6 with clusters closely grouped with the appearance of strange attractors.

The next external environment analysis tool is evaluating competitors' next moves which provide insight into the strategic moves rivals are likely to make in the future. It involves identifying competitors’ strategies, resource strengths and weaknesses, and then predicting the

competitors' next move(s).⁴⁷ Porter's Five Forces Model and SGM provide the nodal links to other aspects of PMESII. Evaluating our rival's next move furnishes a narrative for his motives and potentially allows for the templating of his actions.

Key success factors are the key factors for future competitive success. Key success factors most affect industry members' ability to prosper. It is critical to decide on the two to three most important factors and evaluate how the organization performs on those. "An industry's key success factors are those competitive factors that most affect industry members' ability to prosper in the marketplace – the particular strategy elements, product attributes, operational approaches, resources, and competitive capabilities that spell the difference between being a strong competitor and a weak competitor – and between profit and loss."⁴⁸ These key success factors would highlight the strengths and weaknesses of our own and of our rivals. This would also articulate the key capabilities of our allies and partners maximizing their contributions to the effort in order to gain a competitive advantage over our rivals.

The last two tools for external environment analysis are the strategy canvas and four actions framework. These two tools are original work from *Blue Ocean Strategy* (BOS) authors W. Chan Kim and Renee Mauborgne. The strategy canvas is a graphic depiction of a company's relative performance across its industry's factors of competition. The horizontal axis has the factors the industry competes with and invests in, while the vertical axis identifies the key competing factors buyers receive across the industry.⁴⁹ Figure 7 represents a BOS Strategic Canvas for [yellow tail] wine. [yellow tail] identified a gap between budget and premium wines and developed a bridge to close the gap. [yellow tail] does that by answering the questions established by the Four Actions Framework. The Four Actions Framework (Figure 8) "poses four key questions to challenge an industry's strategic logic and business model."⁵⁰

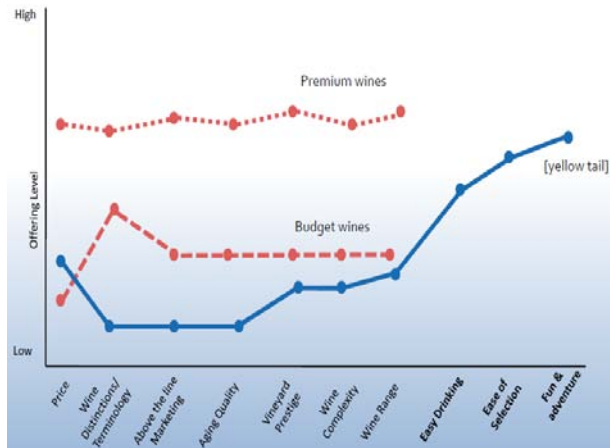


Figure 7. [yellow tail] Strategy Canvas

Source: Strategic Canvas <http://www.blueoceanstrategy.com/wp-content/uploads/2012/07/BlueOceanStrategyPresentation.pdf>

Four Actions Framework

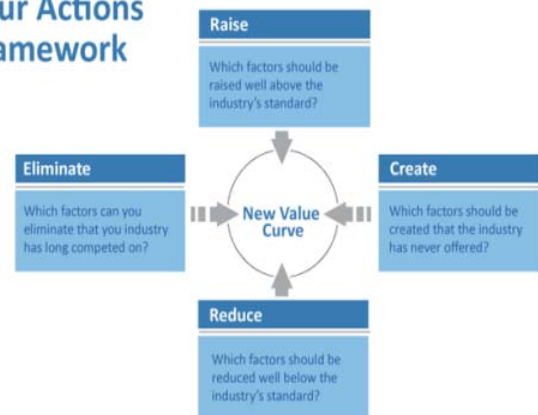


Figure 8. BOS Four Actions Framework

Source: Four Actions Framework, Blue Ocean Strategy <http://www.blueoceanstrategy.com/about/concepts/4-actions-framework/>

Using the Al-Anbar example, a strategy canvas for Al-Anbar security would provide the staff a way forward to generate further actions. For instance, by using Porter's Five-Forces Model and a SGM, the staff's identification of issues and their linkages to other aspects of the problem would become evident. Once done for all elements of PMESII, the staff's understanding or at least identification of the various issues would become more overt.

Internal Environment Analysis

By using the external environment business principles discussed above, the staff needs to analyze our organization's competitive position through internal environment analysis. Some tools of internal environment analysis are: Eliminate-Reduce-Raise-Create Grid, Financial Resources, Organizational Strategic Resources, Value Chain Analysis, and Alliances, Partnerships and Acquisitions Assessments. Eliminate-Reduce-Raise-Create (ERRC) Grid is original work with much detail by Kim and Mauborgne. It identifies the variables the staff wants to eliminate, reduce, raise, or create within the business. Using the [yellow tail] wine example and the strategic canvas in Figure 7, [yellow tail] wine will eliminate, reduce, raise, or create those factors to bridge the gap between budget and premium wines.

Eliminate Enological terminology and distinctions Aging qualities Above-the-line marketing	Raise Price versus budget wines Retail store involvement
Reduce Wine complexity Wine range Vineyard prestige	Create Easy drinking Ease of selection Fun and adventure

Figure 9. [yellow tail] ERRC Grid

Source: ERRC Diagram, http://leobessa.github.com/blue-ocean-strategy-pres0/file/3_tools/yellowtail_grid.jpg

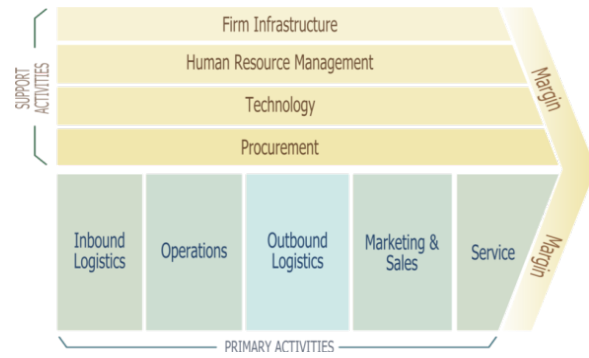


Figure 10. Porter's Value Chain

Source: Porter's Value Chain http://en.wikipedia.org/wiki/File:Porter_Value_Chain.png

An ERRC Grid for the elements of PMESII would provide clarity in tasks and purposes to reach the various endstates. When the elements of PMESII are compared, one would expect similarities in actions to be taken by the commander and staff. Some required actions may contradict one another. For those similar actions, the commander can apply resources to effect more than one element of PMESII. For those that conflict, further analysis (Red Teaming) would be required by the staff to anticipate best case-worse case scenarios.

Our next two internal environment analyses are Financial Resources and Organizational Strategic Resources. Financial Resources are those ratios that identify current status of the company, but delayed. Financial Resources are delayed, because it is a snap shot in time and occurs only after all accounts have closed for that time period (e.g. month, quarter, year). Some ratios are profitability, liquidity, leverage, and activity. Organizational strategic resources discuss organizational culture, human resources, sales and marketing, and information systems including web site strategies. It can also include research and development, operations and logistics, and other resources critical to a business. Financial ratios and organizational strategic resources allow self-reflection on performance. Financial ratios could substantiate internal measures of effectiveness. Organizational strategic resources could uncover the cultural aspects

of the organization that are preventing success in one particular field or in conflict with an allies' organizational strategic resources (i.e. national caveats).

Value chain analysis (Figure 10) identifies where the business excels, lags, or has problem areas. Using Al-Anbar, Iraq as an example, the transportation of all classes of supply are sent via main supply routes (MSRs) due to the security situation and relative flatness of the terrain. The Marines and Soldiers conducting those resupply runs were on the road constantly, which increased fuel consumption, spare parts usage, and exposure to the possibility of combat. Fast forward five years to Afghanistan where the improvised explosive device (IED) rate is higher, MSRs are fewer and terrain is not conducive to resupply via ground transportation. Reliance on alternate energy sources is now a driving force to supply combat outposts and platoon bases. The Value Chain could identify with clarity and quantify the cost of those problem areas.

Competitive strength assessment is an assessment of the business in relation to its rivals; competitively stronger or weaker. Strategic issues assessment is an evaluation of those strategic issues and problems that require immediate managerial attention. The last internal environment analysis tool is the Assessment of Alliances, Partnerships and Acquisitions. "How do alliances, partnerships or acquisitions strengthen the strategy? Who are their alliances/acquisitions and what is the purpose of each alliance/ acquisition? Are they vertically integrated? What segments of the industry value chain has the company chosen to perform? What are they outsourcing?"⁵¹ Assessment of alliances and partnerships is crucial in understanding national caveats, capabilities and limitations. Analysis of the Value Chain in conjunction with the Organizational Strategic Resources reveals those internal deficiencies within the alliance or partnership. These external and internal analyses help to better identify the strengths and weaknesses within a business.

The last tool is the Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis. SWOT identifies external and internal factors that impinge on the business (Figure 11). SWOT can be as detailed or as general as one directs. Once all these analyses are complete, strategic options become apparent or at least provide insight into where and how the business should focus its resources. SWOT analysis provides another way to observe the problem.



Figure 11. SWOT Analysis

Source: SWOT Analysis. <http://www.businesssteacher.org.uk/business-operations/swot-analysis.php>

The discussion of internal and external environment analysis tools relate specifically to businesses and how businesses set themselves apart from their rivals. Clausewitz makes the connection between war and business. It is this connection that allows one to use SMTs in a military context.

Comparison between COG Analysis and SMTs

MCWP 5-1 tasks the staff to conduct a COG analysis. In comparison, SMTs are a best practice that are a foundation of numerous business schools and are in every business textbook. The successes of COG analysis at the levels of war and SMTs at every level of business are directly dependent upon the personnel conducting the analysis. COG analysis identifies critical factors to protect, attack, or neutralize in order to achieve an objective or endstate. SMTs, on the other hand, produce a better understanding of the situation and accompanying circumstances by

identifying factors, ours and rival's surfaces and gaps, and allow for opportunities to be uncovered by the staff. More importantly, SMTs expose and demonstrate linkages between the various elements of PMESII to one another. By providing a better understanding of the situation, these linkages provide opportunities for the commander and staff to apply resources at the proper location and with the correct quantity and quality. When done correctly, COG analysis and SMTs may or may not identify all the critical capabilities, vulnerabilities and requirements of the enemy or rival, but they will better define the problem. When done incorrectly, they waste valuable time and limited resources on perceived CVs that result in a marginal effect on the enemy or rival. The use of SMTs is not to replace COG analysis, but augment COG analysis in its refinement of the CCs, CRs and CVs. The SMTs provide information and analysis into the critical factors (CCs, CRs, and CVs) during Problem Framing and SMTs impact is on the COG analysis outbrief product.

Benefits of using SMT in COG Analysis

The benefits of using SMTs are to provide a different context or perspective to address the problems or issues of our rival. Defining COGs based on Strange & Iron's or Eikmeier's process develops similar solution sets predominantly focused on military objectives. SMTs analyze information based not just on environmental information but through a different context that permits a different framing of the problem.

One of the biggest oversights of Strange & Iron's and Eikmeier's COG analysis has been the impact of society and culture within the analysis. Examples are De-Baathification, de-Nazification and the Al-Anbar Awakening. Utilizing SMTs through the elements of PMESII, or like device, provide linkages in the political, social and cultural areas. The commander and staff can exploit the linkages when the determination is made that the COG is complete. The potential

for less strife and combat operations is a real possibility had the de-Baathification process been halted by the US civilian leadership. The reversal of the de-Baathification process by the US civilian leadership had the possibility to bring stability and security to Al-Anbar years before the Al-Anbar Awakening. The use of SMTs by Multi-National Forces Iraq (MNFI) staff may have provided for the identification of the problems or power vacuum left by Muqtadā al-Sadr in Sadr City, Iraq and could have been identified and mitigated by coalition forces prior to his rise to (greater) influence. Although SMTs provide an additional benefit to the commander and staff in comprehending the problem, SMTs are a tool subject to limitations.

Limitations of using SMTs

SMTs are business tools and rightfully orient towards business with the objective of determining ways to gain competitive advantage in their respective marketplace. SMTs revolve around the use of financial analysis, a focus on profits and are geared towards non-kinetic actions and reactions. Although there are limitations, SMTs provide ways in which to identify methods of performance and methods of effectiveness. Not all the SMTs are applicable at every level of war or in every situation. SMTs are business tools and rely on accepted norms of the business world, ones that focus on non-combat activities.

Just like using Strange & Iron's or Eikmeier's analyses, the proficiency of the person utilizing SMTs is directly proportional to the quality of the end product and value of the information. Although SMTs are relatively straight forward, they do take some understanding in application. Just like Strange & Iron's or Eikmeier's analyses, the staff's differences of opinion in application or definition will delay the development of the product.

Businesses use SMTs to determine where to apply their scarce resources to gain a competitive advantage. That could be in entering a new market, participating in a merger, hostile

takeover or joint venture, or developing a new “widget”. SMTs also provide specific analysis along functional areas of business: Human Relations, Strategic Management (growth, competition, market, profit, etc.), Finance, Operations, and Logistics. Businesses’ extremely complex problems require the staff to conduct a detailed analysis of all sectors and perspectives from internal and external to the business, just like the military. The business problems involve elements of national power from both sides of the perspective.

The staff’s utilization of Porter’s Five-Forces Model of Competition, Strategic Group Maps, Strategy Canvas, ERRRC, and SWOT analysis can provide opportunities to the commander and staff in redefining the situation along the terms of non-combat actions and reactions. The power of SMTs is to provide the staff an understanding of the situation outside of the normal military context. This is an additive capability that in MCWP 5-1 MCPP would be applied during Problem Framing in the development of the COG analysis.

Conclusion

Clausewitz illustrates that war is like business and the duel between two rivals is for supremacy. Understanding that both war and business are non-linear systems or complex problems, simple solutions are not the answer. The commonalities between war and business allow the military and business communities to share best practices and lessons learned between the two somewhat opposite fields. It also allows for a shared context and perspective in how to visualize the problem. This shared context will provide a new perspective in how the military distinguishes problems and potential root causes. It may also allow the military to identify potentially undesirable second and third order effects. The utilization of Strategic Management Tools within the Problem Framing step further defines the COG and allows scarce resources to be applied against the true critical vulnerabilities.

Recommendations

- 1) The Marine Corps Training and Education Command needs to develop the processes necessary to utilize SMTs to feed COG analysis. A separate consolidated effort to develop a streamlined process incorporating SMTs in the Marine Corps Planning Process will provide planners with an understanding on how to use SMTs and which SMTs provide the greatest benefit in certain situations.
- 2) The most recent, current and future conflicts are and will be anything but simple. These complex, nonlinear problems require nonlinear solutions. SMTs are but one way for the staff to identify the problem and potential solutions. The development of nonlinear solutions requires commanders and staffs that can diagnose nonlinear problems. Having commanders and staffs that can operate within a nonlinear problem is dependent on the education of the military in systemic operational design which needs to continue and progress at all levels, specifically at the Intermediate Level Schools.
- 3) Professional Reading Lists have changed over the years to include non-military books, a trend that should continue and include other books from adjacent fields, like business and the use of SMTs. It is imperative that our context for understanding nonlinear problems extends past just military learning. Some recommendations are Adam Smith's *The Wealth of Nations*, W. Chan Kim & Renee Mauborgne's *Blue Ocean Strategy*, James Gleick's *Chaos: Making a New Science* and Robert Jervis's *System Effects: Complexity in Political and Social Life*. It was the author's perception that *Blue Ocean Strategy* provides tools applicable to military problem framing specifically COG analysis. And it was Gleick's *Chaos* and Jervis's *System Effects* that reiterate the benefits of addressing a problem from a different perspective. Books outside our normal military reading lists will challenge our perceptions of current doctrine.

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 - ⁶ Ibid, 1-4.
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 - ²³ Jonas Andersson. "Center of Gravity Analysis – an Actual or Perceived Problem?" Master's thesis, Swedish National Defence College, 2009. <http://fhs.diva-portal.org/smash/get/diva2:424708/FULLTEXT0>. Andersson researched the similarities and differences in the theories

of Strange & Iron and Milan Vego “regarding CoGs, their sub elements and methods for analysis.” A practical comparison was used in a limited phase of the Falklands War. Major Andersson’s research indicates “that the diversity in theory is a perceived problem. The identified divergence does not reflect crucially on the CoG analysis and the variation of the input provided to the operational design is minor. The CoGs and the critical vulnerabilities identified are the same or at least similar, no matter which of the two theories was used in this research.”

²⁴ The term “strategic corporal” comes to mind. It reiterates that the Corporal (E-4) may have more impact on the tactical, operational and strategic situation through his interaction with the populace than the General implementing actions to disrupt, neutralize or destroy enemy’s CVs. -

²⁵ Clausewitz, 75.

²⁶ Ibid, 75.

²⁷ Clausewitz, business reference: 75, 89, 91, 106, 111, 129, 131, 158, 187, 288, 447, 482, 502, 530, 535, 578, 592, 599, 603, 606, 636; commerce reference: 97, 149, 500; economy reference: 213, 241, 259, 284, 286, 500. From <http://www.clausewitz.com/bibl/> managed by Dr. Bassford.

²⁸ Ibid, p75.

²⁹ Ambassador Sea Kosal, Cambodian Representative to the United Nations, Letter to the UN Security Council, July 18, 2008. http://www.un.int/cambodia/Bulletin_Files/July08/Letter_18_Jul.pdf, “Thailand and Cambodia reach deal on temple border,” BBC.com, December 11, 2011, <http://www.bbc.co.uk/news/world-asia-pacific-16294309>.

³⁰ U.S. Army, *Operations*, Field Manual (FM 3-0), A-1 - A-4.

³¹ Examples of articles that highlight problems people have with the organizations listed. “Why is the WTO a problem?” Greenpeace International <http://www.greenpeace.org/international/en/campaigns/trade-and-the-environment/why-is-the-wto-a-problem/>. Matthew Saltmarsh, “A Bloated U.N. Bureaucracy Causes Bewilderment,” *The New York Times*, January 5, 2011, <http://www.nytimes.com/2011/01/06/world/europe/06iht-nations06.html>. Brett D. Schaefer, “A Progress Report on U.N. Reform,” *Heritage Foundation Background No. 1937*, May 19, 2006, <http://www.heritage.org/Research/InternationalOrganizations/bg1937.cfm>. Brett D. Schaefer, “Who Leads the United Nations?” *Heritage Foundation WebMemo No. 1054*, December 4, 2007, <http://www.heritage.org/research/reports/2007/12/who-leads-the-united-nations>. Edward C. Luck, “Reforming the United Nations: Lessons from a History in Progress,” *Academic Council on the United Nations System Occasional Paper No. 1*, 2003, <http://www.reformwatch.net/fixers/58.pdf>.

³² Clausewitz, 75.

³³ Investopedia, s.v. “economics.” <http://www.investopedia.com/terms/e/economics.asp#axzz2KzUIIxxT> (accessed February 15, 2013).

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³⁵ James Dobbins, Andrew Rathmell, Keith Crane, Seth G. Jones, and John G. McGinn, “Germany,” *America’s Role in Nation Building: From Germany to Iraq* (Santa Monica, CA: RAND Publications, 2005), 3-23. Earl F. Ziemke, *The US Army in the Occupation of Germany: 1944-1946* (Washington, DC: DA, Center of Military History, 1990), 380-390, <http://www.history.army.mil/books/wwii/Occ-GY/index.htm>. And discussion in seminar led

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