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DEVELOPING METRICS IN THE GLOBAL WAR ON TERRORISM

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A paper submitted to the faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

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14 February 2005

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Abstract

The United States Government lacks meaningful measurements for progress in the Global War on Terrorism. Measured by traditional military methods, the United States scored quick victories in both Afghanistan and Iraq. The United States captured or killed hundreds of terrorist/insurgent operatives and toppled two governments who provided support to terrorist organizations. However, the U.S. government has not satisfied public opinion with its explanations of forward progress in the war. Metrics must be developed to give meaning to our military actions. There are several parallels between what the military is now facing in measuring progress in the Global War on Terrorism and what business leaders faced during the information age revolution in the early 1990's. Computer networks in the 1990's allowed companies to monitor lead indicators that evaluated a wide perspective of intangible assets. Companies that recognized the new capabilities the information age offered reacted much more quickly to changes in the market and overwhelmed companies that did not. The United States military needs to apply these lessons to our war planning doctrine to develop a balanced approach to measuring our success in the war on terror.

Table of Contents

Introduction	1
Analysis	2
-Traditional Concepts of War Planning	2
-Measuring the End State in the War on Terrorism	4
-The Need for Balanced Metrics	6
-Problems with Traditional Measures	7
-New Critical Factors	9
Recommendations	10
-A New Planning Team	11
-Imbedding Metrics in the Planning Doctrine	12
-A Balanced Approach	13
-Building a Dashboard	13
Counter Arguments	16
Conclusion	18
Notes	19
Bibliography	20

List of Illustrations

Figure	Title	Page
1.	Top Down Approach to Developing KPIs	14

Introduction

- Today we lack metrics to know if we are winning or losing the global war on terror.

- Donald Rumsfeld¹

The United States Government lacks meaningful measurements for progress in the Global War on Terrorism. Measured by traditional military methods, the United States scored quick victories in both Afghanistan and Iraq. The United States captured or killed hundreds of terrorist/insurgent operatives and toppled two governments who provided support to terrorist organizations. Moreover, there has not been a significant terrorist attack within the territorial United States since September 11, 2001. Despite these positive indications, the United States has not declared victory against terrorism nor has the U.S. government satisfied world or domestic opinion with explanations of forward progress in the war. Metrics must be developed to give meaning to our military actions.

Military metrics quantify progress toward the desired political end state. Numbers of enemy soldiers killed, quantities of enemy military equipment destroyed, and amounts of enemy territory occupied are examples of traditional measurements of success in war. These metrics show how well a military plan of action accomplished its goals against a traditional military adversary. However, these metrics do not adequately represent progress in warfare versus terrorism and insurgencies. Terrorist and insurgent groups have shown an incredible ability to regenerate despite continuous losses of people, equipment and bases of operation, rendering these traditional military metrics obsolete. When used in the Global War on Terrorism, traditional military metrics demonstrate the *performance* of the operational plan towards its *own ends*. The military needs a new set of metrics that measure the *effectiveness* of the operational

plan toward the desired *political end state*. Current war planning doctrine does not have a process to develop these kinds of metrics.

There are several parallels between what the military is now facing in measuring progress in the Global War on Terrorism and what business leaders faced during the information age revolution in the early 1990's. Until then, American business relied almost solely on financial accounting measures to gauge performance. These financial models measured events of the past and did not measure investments in capabilities that provided value for the future.² These lag indicators forced executives to focus on short-term cost reduction, quality improvement and low-price competition to generate greater financial performance. The information age made these narrow-scoped methods of competition obsolete. Computer networks allowed companies to monitor lead indicators that evaluated a wide perspective of intangible assets. Coupled with the traditional financial metrics, companies created a "dashboard" of metrics enabling them to better exploit their intangible assets in a balanced approach towards financial goals.³ Companies that recognized the new capabilities the information age offered reacted much more quickly to changes in the market and overwhelmed companies that did not. The United States military needs to apply these lessons to our war planning doctrine to develop a balanced approach to measuring our success in the war on terror.

Analysis

Traditional Concepts of War Planning

The United States military machine has carefully developed the science of war planning. The Joint Doctrine for Campaign Planning and the Joint Operation Planning and Execution System (JOPES) lay out the foundation for translating National Strategic Objectives to combat

operations. These publications list the steps that Combatant Commanders are expected to utilize when developing their operational plans. These steps take the operational planning team through a well developed process that ensures the team:

- (1) understands the desired end state and military objectives;
- (2) identifies the adversaries strengths, centers of gravity, and weaknesses; and
- (3) develops an operational concept to achieve the objectives.⁴

This publication includes planning steps for more than just the military instrument of national power. These steps also consider the use of diplomatic, economic and informational instruments. Although the planning process indirectly considers metrics in the discussion of end state, phasing and objectives, it does not recommend any steps for developing these measurements of success.

When most people think of measurements of warfare, they think in terms of state on state conflict. In these traditional wars, progress towards the objective is easily measured. In a Clausewitzian process, a planning team identifies an enemy's armies, military equipment or territories as a center of gravity. Metrics of success are intrinsically obvious. Numbers of enemy casualties, quantities of enemy military equipment destroyed or captured, and amounts of enemy territory occupied are used to measure progress towards the operational goal. Planning steps are not necessary to develop these easily identifiable measurements.

However, in an operation versus insurgents or terrorist organizations, planners may identify non-traditional centers of gravity. These centers of gravity are not easily quantifiable and require comprehensive examination in order to determine appropriate measures of effectiveness. A methodical approach to this process is needed to ensure consistency amongst war planning teams and to pass down to future generations of war planners. This process should be added to our current war planning doctrine.

Measuring the End State in the War on Terrorism

Many have questioned the grammatical correctness of the phrase “War on Terrorism.” The U.S. President defines terrorism as “premeditated, politically motivated violence perpetrated against noncombatant targets...”⁵ Terrorism is an action and not a person, place or tangible entity. This leads linguists to argue that fighting a war against terrorism makes no more sense than fighting a war against kamikazes. However, this argument diverts attention from President Bush’s intent to “fight terrorist networks, and all those who support their efforts...”⁶ Regardless of the semantics, the ultimate U.S. military goal is to “defeat terrorist organizations with global reach.”⁷

President Bush defines the end state desired in the Global War on Terrorism as “a world... where the threat of terrorist attacks does not define our daily lives.”⁸ This differs from the political goals that the President traditionally asks the military to translate to combat action. Normal end states for these combat actions are easily defined through the traditional metrics of warfare. The desired end state in the war on terrorism will be defined by United States public opinion and not the complete elimination of world-wide terrorist organizations. Military planners need a process to develop metrics to show progress towards this end state.

In a traditional war, war planners use the desired end state to determine the conflict termination point. The Joint Doctrine for Planning Guide defines conflict termination as the point “when acceptable political-military conditions exist, justifying a cessation of combat operations.”⁹ In order to achieve these acceptable political-military conditions, the enemy’s center of gravity* must be destroyed, leaving the enemy without the will or means to resist.

* This assumes that the planners correctly identify the Center of Gravity.

In the Global War on Terror, it may be very difficult to completely destroy the enemy's center of gravity. For instance, there may always be people in the world who have the will or the means to resist the political goals of the United States. Therefore, this war may never come to a point where acceptable political-military conditions exist so that the United States may declare an end to combat operations.

On the other hand, insurgents and terrorists plan for long term warfare. The typical terrorist's desired end state forces an established government to accept conditions contrary to its national interests. To achieve these ends, the terrorists usually start with meager means. Because of their position of weakness, they must have time to build their resources while simultaneously making periodic demonstrations of their existence. Every day the terrorists continue to exist and every terrorist act they commit shows both the weakness of the incumbent government and the strength of the terrorist's organization.

In order to compete with terrorists in the Global War on Terrorism, the United States military requires modifications to our traditional, short-term war planning process. War planners used this process to develop plans that have captured and killed thousands of insurgents and terrorists in Operations Enduring Freedom and Iraqi Freedom, yet both Al Qaeda and the Iraqi insurgency persist. These terrorist/insurgent groups may continue to exist for many years. Because American actions versus these organizations are unlikely to achieve a quick victory, the United States military will find itself in competition with the terrorists/insurgents for the hearts and minds of people around the globe. The American military organization must accept this probable outcome and learn to contend long term with terrorist organizations, just as civilian companies compete with their contenders. This long-term competition will require non-military metrics to assess strategies for progress towards the desired end state.

The Need for Balanced Metrics

Pursuing a long term plan without appropriate, well-balanced measures for success can lead to disastrous outcomes. For example, in World War One the Germans identified the British working class morale as the center of gravity for Great Britain's war effort. Dr. Herman Levy, a German war planner, connected British public morale to the supply of bread. Unlike other European nations who held about one year's worth of grain in supply, Great Britain relied on an "uninterrupted stream" of grain delivered by merchant ships.¹⁰ Through a series of mathematical calculations, he determined that German U-boats could sink enough British merchant shipping to drastically reduce the supply of grain. He hoped that the lack of grain would demoralize the British public, and in turn they would demand that their government sue for peace.

This plan possessed some powerful merits, and might have succeeded had the German Admiralty identified non-traditional metrics to go along with their traditional, military ones. By measuring only the amount of merchant tonnage sunk, they did not measure the progress of their strategy in a holistic manner and lost sight of their ultimate strategic goal. In addition to shipping sunk, the planners should have determined a method to measure not only British public opinion, but also grain supply levels and the availability of bread. Another metric worthy of measure might have been American war intentions. These additional metrics assess other aspects of translating their strategy into the desired end state. Because the Germans measured only the amount of merchant shipping sunk, their planning staff measured the *performance* of the plan to sink merchant ships and not the *effectiveness* of the German operation to sink merchant ships in pursuit of Germany's strategic *objective* of destroying British public morale. As a result of their single perspective measure for success, Germany pursued ever increasingly

aggressive tactics to maximize their chosen metric. This ultimately led to the tragic decision for unrestricted submarine warfare in spite of the clearly understood consequence of bringing the United States into the war on the side of the British. Judged through the lenses of several perspectives, it is obvious that the short-term military gains that unrestricted warfare offered did not outweigh the long-term political loss brought about by U. S. intervention. This example demonstrates the need for a metric development process within current war planning doctrine.

Problems with Traditional Measures

When fighting an enemy in asymmetric warfare, traditional military measures are problematic. These metrics cannot be the sole means used to show evidence of progress towards making citizens safer from terrorism or an insurgency. For example, during the Vietnam War the occupation of territory did not equate to actual control of the population. The U.S. could not declare victory in the war despite the fact that U.S. forces occupied all the key areas of South Vietnam. Although the U.S. military kept North Vietnamese Army regulars clear of South Vietnam, they did not control the South Vietnamese people. To avoid direct force-on-force conflict with the powerful U.S. military, the Viet Cong infiltrated into South Vietnamese hamlets and established “Liberation Committees.” In 1968, the Hamlet Evaluation System suggested that more than 46 percent of the population was under the influence of these “Liberation Committees.”¹¹ Occupied territory did not accurately measure success in this insurgency.

Today in Iraq, enemy combatants choose to abandon the laws of armed conflict. Such tactics include attacking from protected dwellings, conducting operations while wearing civilian clothing and firing weapons from the midst of civilian crowds. When U.S. forces respond to these tactics, non-combatant dead are often mixed with enemy combatant dead and make it

difficult to distinguish between the two. In this type of asymmetric warfare, body count is an unreliable metric.

Terrorist organizations can quickly replace low level members with new recruits. Most of these terrorists do not require long, arduous training. The replacement cost to the organization is minimal. These organizations also rapidly promote new leaders to replace captured or killed leaders. The information age has brought about unprecedented ease of information exchange, making it extremely difficult to kill the ideas of an organization by killing its leader. Measuring the numbers of killed/captured terrorists of any level within the terrorist organization is not a significant, stand-alone metric.

Because heavy military equipment is easily targeted and destroyed by United States air power, insurgents and terrorists are forced to use small arms as their weapons. Small arms are cheap and easily acquired nearly anywhere in the world. As a result, captured or destroyed terrorist weapons are easily replaced. For example, in a 60 day operation into Cambodia during the Vietnam War, United States and South Vietnamese forces captured more than 9,000 tons of weapons, ammunition and supplies.¹² But as both General Abrams and General Tran Dinh Tho acknowledged, this posed little more than a temporary setback for the North. Measuring the amount of weapons destroyed or captured did not indicate progress towards the defeat of the VC insurgent/terrorist.

General Abrams correctly identified the problems with traditional military metrics when he assumed command of U.S. forces in Vietnam in 1968. He immediately moved to deemphasize body count as a metric of success. He felt there was very little correlation between the security of Vietnam and the numbers of enemy killed. In a typical comment on the matter, General Abrams said “I know body count has something about it, but it’s really a long way from

what is involved in this war. Yeah, you have to do that, I know that, but the mistake is to think that is the central issue.”¹³

New Critical Factors

- One might say that the physical seem little more than the wooden hilt, while the moral factors are the precious metal, the real weapon, the finely-honed blade.

- Carl von Clausewitz¹⁴

Traditional military metrics alone can not sufficiently demonstrate progress towards security in the war on terror. Other metrics must be added to measure new critical factors in this different kind of warfare. In this new age of warfare, the will of the American people, the spirit of the enemy and the “hearts and minds” of the people in the “arc of instability” are equally important to the traditional critical factors. This concept of attacking moral factors is not new. Over 2000 years ago Sun Tzu analyzed such strategies in *The Art of War* and nearly 200 years ago, Carl von Clausewitz sprinkled references to the importance of moral factors throughout his great work, *On War*.

Despite understanding the great significance of moral factors, Clausewitz focused on the destruction of the enemy forces as the ultimate aim of warfare. In his chapter titled Moral Factors, he wrote of the inseparability of the physical and the psychological factors of warfare. Because he could not measure these psychological factors, Clausewitz felt “content to have pointed out the general importance”¹⁵ of these critical factors without considering methods to attack them.

The United States military planning process follows Clausewitz’s reasoning and does not attempt to assess military strategy along these lines. This situation is a logical result of the force-on-force wars that the United States military has traditionally fought. However, the Global War

on Terrorism is not a force-on-force war. This war requires a strategy that attacks these moral factors, and therefore requires changes to the war planning process.

When targeting moral factors for attack, effects and measurements must be planned together in order to achieve the operational goals. Instead of identifying traditional critical factors like armies, military equipment or territory, a planning team might identify hearts and minds, morale or public opinion as possible centers of gravity. These kinds of critical factors are not open to direct military attack nor are they easily quantifiable. It is vitally important to select measurement criteria in order to monitor the overall progress towards the desired end state.

Recommendations

The problem with current U. S. war planning doctrine is that it does not overtly consider the development of metrics within the process of designing an operation.* In designing operations in the Global War on Terrorism, war planners are identifying moral factors for attack that cannot be effectively measured with traditional methods. Although the moral factors may be similar from operation to operation, the methods for attack and measures of success may be unique to the operating area or enemy. For these reasons, selecting measures is not a one time event. U. S. war planning doctrine needs to include a metric development process.

When planning operations, it is imperative that the planning team develops the metrics before creating courses of action. Developing metrics after selecting a course of action could lead to measuring the performance of the plan instead of measuring the plan's progress towards the desired end state. Although Measures of Performance (MOPs) are important, a commander

* In fact, metric development is becoming a problem at all levels of war planning. In a January 17, 2005 article for InsideDefense.com, Jason Sherman reports that the computer modeling tools used by the Pentagon to provide insights to major combat operations use metrics more suited for conventional warfare. These tools are inadequate when used to analyze operational plans versus terrorist and insurgents. LtGen Robert Magnus said "There's no way to measure anything except traditional right now."

relying solely on MOPs may quickly lose sight of the desired end state. The operational commander needs Key Performance Indicators (KPIs) that measure the effect the operation is having on the identified Center of Gravity/Critical Vulnerabilities. Therefore, the metric development process should be added to the mission analysis portion of the war planning doctrine.

Good metric selection for the KPIs and MOPs will provide continuous benefits. Properly selected KPIs will prevent operational commanders from losing sight of the strategic objectives by linking a course of action to goals and objectives. The MOPs and KPIs together repetitively evaluate courses of action as they progress towards the desired end state. This feedback will help to quickly identify losing strategies in time for correction.

A New Planning Team

Developing “moral metrics” requires a broad range of perspectives. If the Department of Defense is the lead organization in the war on terror, then it is not surprising that traditional war metrics are identified to demonstrate progress. The same is true for business organizations. For example, when the IT department of a major corporation leads a company project, they frequently focus on improving access to information.¹⁶ By narrowly focusing on one particular aspect of the overall strategy, the metrics the IT department develops might not accurately translate the strategic goals of the company to action.

Although there is nothing new about an interagency planning team, the team may need even more diversity to develop a broad range of metrics for operations in the Global War on Terrorism. In addition to the Joint Interagency Task Force (JIATF) planners, a planning team should consist of marketers, economists, pollsters and systems analysts. These non-JIATF

members should have some warfare training to clearly understand the war planning process. In the near term, these experts could be recruited from the business world into the reserve officer corps. Reserve Officer Training Corps (ROTC) programs should be established to ensure a steady flow of these experts into the Reserves. It is important that these individuals continue to work in their fields as civilians in order to provide the operational planning team with variety of perspectives required to win the Global War on Terror.

Imbedding Metrics in the Planning Doctrine

- There is no doubt that the job of decision makers would be easier if a single effectiveness measure could appropriately be used. However, I contend that such procedures place the analyst in the position of making a considerable number of value judgments that rightfully should be made in the political decision making process, and not by the analyst. Such value judgments are buried in the procedures used by the analysts and are seldom revealed to, or understood by, the decision makers.

-H. P. Hatry¹⁷

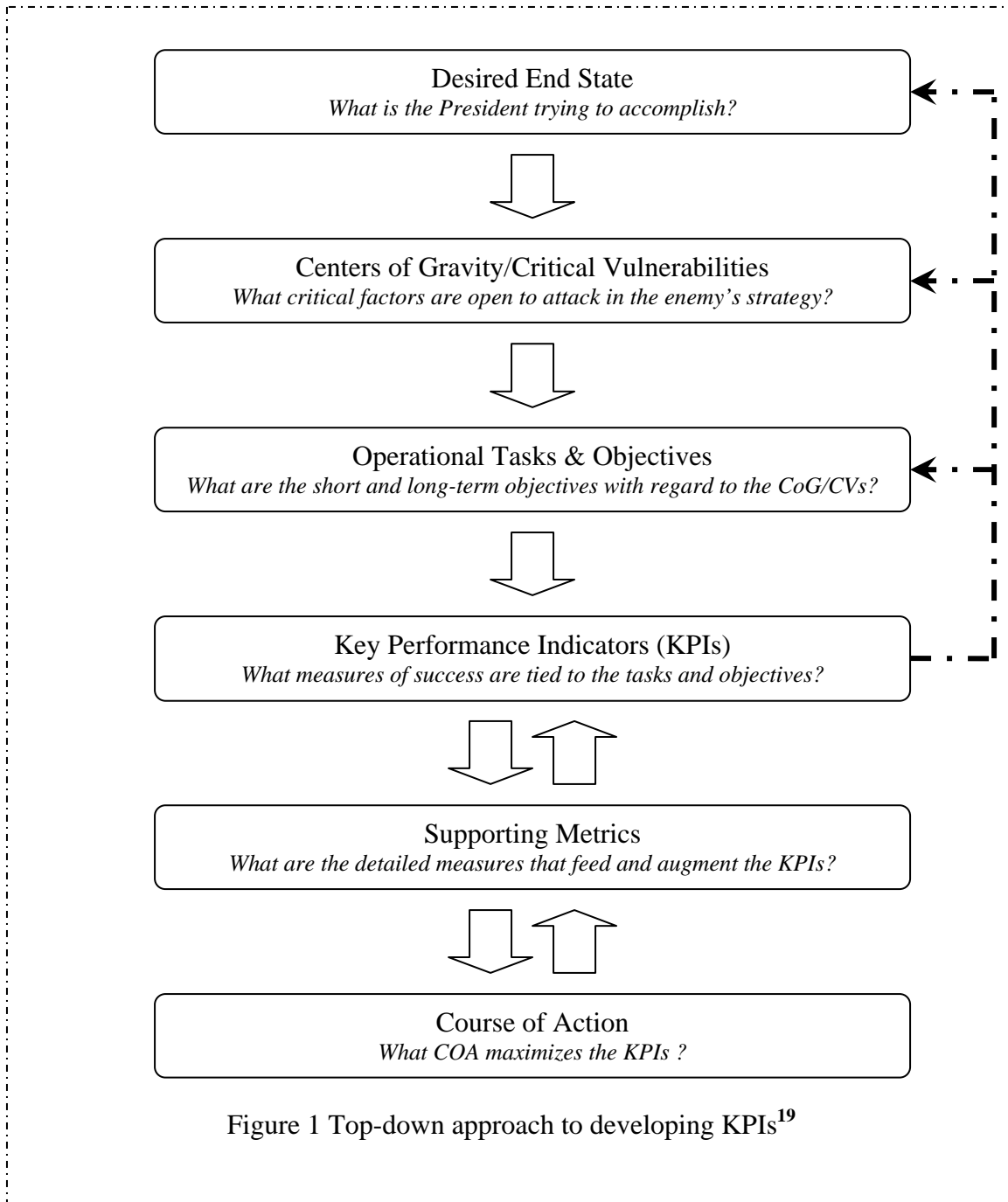
In the Global War on Terror it is vital that the metric development process be imbedded in the planning doctrine. In this kind of warfare, it is very likely that the war planners will select moral factors as Centers of Gravity or Critical Vulnerabilities during their critical factor analysis. Because these moral factors are difficult to directly measure, the planning team will have to decide on proxy measurements that will most closely represent the true value of the given factor. For example, the World Health Organization often uses trends in infant mortality rates to measure progress towards improved medical care in third world countries.¹⁸ In the selection of proxies, the team will need to make value judgments as to how the proxies relate to the true measurement. These value judgments are the crucial link that explains how the selected measures will accurately evaluate the plan to achieve the desired political end state. These value judgments must therefore be made by the same people who created the plan.

A single proxy metric from a single perspective will most likely not be sufficient to monitor the progress of an operation in the war on terrorism. A single proxy metric may not even perfectly represent the value of one operational critical factor. It might take several metrics from a variety of perspectives to properly approximate the true measurement of a critical factor. However, if these metrics are appropriately selected, then achieving positive measurements via the proxies will also positively affect the real metrics.

A Balanced Approach

In addition to the military perspective, metrics from the other components of national power must be considered. In the Global War on Terrorism, the Combatant Commander needs to employ the entire spectrum of national power. The operational commander should understand what effects the United States diplomatic, economic and informational efforts are achieving. In the civilian business world, a list of measurements from many perspectives is often referred to as a “dashboard” or a “balanced score card.”

An appropriately selected “dashboard” will do more than just enable the operational commander to monitor the progress of the plan, but it will also transmit his intentions to his subordinate commanders. The “dashboard” shows the commander in the field how his actions affect the overall achievement of the desired political end state across the entire spectrum of national power. The value judgments made by the operational commander’s planning team will be passed on to the subordinate commanders, who can then make decisions in the field that best support the selected strategy.



Building a “Dashboard”

A top-down approach for metric development fits in well with current planning doctrine (see Figure 1). Just as in the mission analysis phase, the team must work backwards from the

desired end state to determine exactly what must be accomplished to successfully complete the mission. Measures are merely a yard stick for the critical factors and are meaningless without both a beginning and an end point. In contrast, a bottom-up approach would not be as effective. This approach would suggest starting with a whole range of measures, and then selecting which one best fits the situation. In the bottom-up approach, the measures would drive the selection of the center of gravity in place of a careful critical factor analysis. This could result in combat action or the employment of other aspects of national power that do not act against the ability of the enemy to accomplish his mission.

Once the planners have clearly defined the desired end state and completed a critical factor analysis, they must determine the tasks and objectives that must be accomplished to successfully act against the enemy's Center of Gravity and Critical Vulnerabilities in order to reach the desired end state. With these objectives in mind, the planning team must then decide upon how to measure change with regard to the targeted critical factors. At this point, the current doctrine breaks down. Two steps need to be added to the current doctrine in order to address this deficiency as seen in Figure 1.

The first new step for the planning doctrine is Key Performance Indicator (KPI) development. KPIs are actionable metrics that are meaningful in the achievement of the objectives. In a traditional warfare example, if China were to invade Taiwan the USPACOM planning team might identify amphibious ships as a Critical Vulnerability. The team might further identify a minimum number of amphibious ships the Chinese need to conduct the operation. The team might then select as an objective to reduce the numbers of Chinese amphibious ships below the minimum required level. The logical KPI for this example is the number of Chinese amphibious ships available to conduct the operation.

This process will not be as easy when a moral factor is selected by the planning team. For example, in the Global War on Terror, the planning team might decide that the recruiting pool for an insurgency is a Critical Vulnerability. The team might further decide that the insurgents need a certain level of popular dissatisfaction with the incumbent government in order to expand the insurgency. As an objective, the planning team might then choose to raise satisfaction to a specified level in order to “dry-up” the insurgency. Since it is difficult to directly measure satisfaction, the planning team might select a “dashboard” of proxies. Opinion polls, voter turn out, and numbers of informants would make excellent proxies to measure the population’s satisfaction with the government.

In addition to KPIs, the planning team might also determine other metrics that support the KPIs, but do not necessarily directly measure progress towards the objective. For instance, building new schools and roads lead to increased satisfaction with an incumbent government, but do not directly show the level of popular satisfaction. Nonetheless, these metrics are important and need to be identified in order to accomplish the long term objectives.

A feedback loop is critical to the success of any long-term plan. This feedback will ensure that the selected course of action is having the intended affect on the targeted Center of Gravity or Critical Vulnerability, and that it is accomplishing the political goals identified by the President. The operational commanders must not lose sight of the political objective in their pursuit of military objectives.

Counter Arguments

Two alternative concepts identify the extremes concerning measuring and attacking the moral factors in the Global War on Terror. At one end of the spectrum, there are those who

contend that a nation can effectively use every aspect of national power to affect the moral factors. They think war planners should create metrics to govern the nation's actions. In opposition, there are others who argue that once battle is joined, combat is the only means to affect the moral factors. They believe that the operational commander must keep his objective in sight without regard for the fickle nature of non-military measures. Many experts have carefully studied both concepts.

In support of the first concept, the Joint Warfighting Center (JWFC) offers Effects Based Operations (EBO) as an alternative to the current war planning doctrine. Although EBO has merit, the method suggests that every tactical action be carefully measured for effects in a System of Systems Analysis (SaSO). Although it recognizes the Joint Intelligence Preparation of the Battlefield (JIPB) process, EBO does not utilize the JIPB outputs. EBO attempts to get right to changing the behavior of the enemy without using a Critical Analysis to determine the enemy's Center of Gravity. Although offering detailed analysis, the suggested planning process attempts to turn operational art into operational science. This complex and ethereal planning process would limit the use of the operational and tactical commanders' judgment. Metrics *should not* reduce every decision to a set of mathematical equations.* Metrics *should* be a management tool used at the highest levels to measure progress of the operation and disseminated to the lower levels to be used as a guide for tactical decisions.

The thoughts and ideas of General Helmuth Karl Bernhard von Moltke represent the concepts at the other end of the spectrum. Followers of von Moltke believe that political and military actions are completely separated. They believe that the effects of military actions cannot and should not be measured through any perspective other than the traditional military

* In a joke told during the Vietnam War, Defense Secretary McNamara input all of General Westmoreland's traditional wartime metrics into a Cray supercomputer after Tet in 1968. He tasked the computer to determine when the United States would win. To his dismay, the Cray concluded that the United States had already won in 1965!

ones. A planning team following these methods would determine that the only way to break a nation's will is through killing her troops, destroying her equipment and capturing her territory. They would use Vietnam as an example of political interference and would say that a successful outcome could only have been achieved through the invasion of North Vietnam.

However, as Clausewitz pointed out "war is merely a continuation of policy by other means."²⁰ Political and military instruments of power can effectively be used together to achieve the desired end state. But the political position must remain superior to the military position. The military leaders and the political leaders must continually evaluate if the political goal is worth the price their nation must pay to achieve it. Metrics must be developed to make this determination.

Conclusion

The United States must add metric development to its war planning doctrine. Measurements are critically important to the operational commander. As any major business executive will say "If you can't measure it, you can't manage it."²¹ These measures must be carefully selected so that they clearly link the strategy to the objective because the measurements will drive the course of action.

However, metrics are not the definitive solution to successfully fighting and winning the war on terrorism. Planners must still create winning strategies to achieve political goals. But without measures, how will they know that the strategy is succeeding? How will they know if a change in strategy is improving progress towards the desired end state? How will they determine the return on the money and resources invested on the strategy? How will they know when the strategy achieves victory? By adding metrics to the planning process, planners can successfully answer these questions leading to strategies that overwhelm the enemies of the United States.

Notes

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