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VAM

Vulnerability Assessment Method

Pocket Guide

A TOOL FOR CENTER OF GRAVITY ANALYSIS

Christopher M. Schnaubelt
Eric V. Larson
Matthew E. Boyer

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Preface

The Asymmetric Warfare Group has used the Vulnerability Assessment Method (VAM) for a variety of large-scale interagency exercises at the operational and theater levels. The various players during these exercises typically act at the combatant command, service component command, Department of State bureau, or embassy level. To help the players conduct critical-factor analysis and planning, these exercises used "An Introduction to the Vulnerability Assessment Method: A Practitioner's Handbook,"[1] a document produced for the U.S. Army Asymmetric Warfare Group. The group also advises deployed tactical units in the field and subsequently asked the RAND Arroyo Center to revise the practitioner's handbook to make it more useful at the operational and tactical levels, with a primary audience of brigade combat team commanders and staffs; explain how the VAM can be embedded into doctrinal planning processes; and produce the resulting document in a size that would fit into a cargo pocket.

This Vulnerability Assessment Method Pocket Guide complements and builds on the practitioner's handbook. However, the pocket guide differs in two important ways: (1) it provides a step-by-step process for identifying centers of gravity and (2) begins with an analysis of critical capabilities and uses the results to determine the centers of gravity, instead of the reverse.

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[1]   Johns Hopkins University Applied Physics Laboratory, "An Introduction to the Vulnerability Assessment Method: A Practitioner's Handbook," coordinating draft, Laurel, Md., August 17, 2010.

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Summary

The Vulnerability Assessment Method Pocket Guide (VAMPG) describes a process for identifying adversary, friendly, and other key stakeholder centers of gravity (COGs) to support the development of plans that will exploit adversary vulnerabilities while protecting friendly ones. It can help commanders and staffs, and other leaders and planners, identify what is most important in the adversary and nonadversary systems to avoid wasting resources by pursuing less-productive courses of action. By analogy, it can help leaders focus on removing the queen bee from the hive instead of chasing thousands of worker bees. As an example, it can help identify the need to devote sufficient resources to protect the weakest link in one's own logistics chain.

Most of the steps in this VAMPG are already accomplished as a part of Joint Intelligence Preparation of the Operational Environment, the Joint Operation Planning Process, and Army Design/Operational Art. The guide therefore builds on the foundations of joint and Army doctrine by providing a technique for identifying centers of gravity.

This pocket guide uses more of an operant characterization of COG, defining it as the primary entity that inherently possesses the critical capabilities to achieve the objective of the organization that owns it. It is something tangible. It is a "doer" that is capable of achieving the goals of the organization that owns it. As the term is used in this pocket guide, the COG is a physical entity capable of accomplishing the organization's ends. Contrary to doctrine, COG, within the VAMPG, cannot be an intangible quality, such as charismatic leadership or "will of the people."[1] (However, these might be critical requirements.)

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[1]   Current doctrine and many theorists argue that at the strategic level a COG can be moral or physical. The willingness of the public to support a conflict and the strategic and persuasive abilities of a particular leader are often cited as two examples of

Other key definitions include the following:

- *Critical capabilities* are the primary abilities essential to the accomplishment of the objective that merit a COG to be identified as such within a given context.
- *Critical requirements* are essential conditions, resources, and means that the COG requires to perform the critical capability. These are things that are used or consumed to carry out an action, enabling a critical capability to wholly function.
- *Critical vulnerabilities* are critical requirements or components thereof that are deficient or vulnerable to neutralization, interdiction, or attack in a manner that will achieve decisive results.

Key to the approach of this guide are five planning steps synthesized from the processes found in U.S. joint and service planning doctrine. The VAMPG further incorporates techniques for identifying COGs for the adversary, one's own organization, and nonadversary organizations (i.e., partners, neutrals, others). In the outline below, the additions are indicated in italics. The intent of these additional steps is to prompt operational planners to construct a more comprehensive understanding of the operational environment in terms of the adversary's ends, ways, and means and their own ends, ways, and means. The following are the main steps described in this guide, along with descriptions of some of their key elements:

1. Receive mission; understand higher headquarters guidance and strategic direction.
2. Understand the operational environment.
3. Frame and define the problem:
   a. Identify the problem or problem set, then view it as an adversary system.
   b. Determine the adversary COG:

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moral COGs. Physical COGs are typically military or economic resources such as an air force, an army in the field, or the industrial base that enables production of military goods required to continue a war effort. Joint Publication (JP) 5-0, *Joint Operations Planning*, August 2011, recognizes that at the operational and tactical level COGs are more likely to be physical.

i. *Identify the organization's desired ends. (What are the adversary's goals?)*

ii. *Identify "ways" or actions that can achieve the desired ends.*

iii. *From the preceding list, select the way(s) that analysis suggests the organization is most likely to use. This identifies the critical capability(ies).*

iv. *List the organization's means or resources available or needed to execute the critical capability. (When using a system-of-systems analysis, the means may be actors or nodes.)*

v. *Select the entity (tangible agent) from the list of means that inherently possesses the critical capability. This is the COG as defined in the VAMPG. It is the doer of the action that achieves the ends.*

c. Identify the adversary COG's critical requirements, then its critical vulnerabilities:

i. *From the remaining means, select those that are critical for execution of the critical capability. These are the critical requirements—what the COG requires to perform its critical capability. (For example, if the COG is an armored corps and if its critical capabilities are to attack, seize, occupy, and defend, its critical requirements could be command and control, logistics, fires, and maneuver.)*

ii. *Complete the process by identifying the critical requirements that are vulnerable to adversary action. (Analyze the critical requirements from substep c.i to determine which are susceptible to an attack that would achieve decisive results. For example, if an armored corps has extended lines of communication and if friendly forces have air superiority, the supply lines necessary to feed, fuel, and arm the corps could be a critical vulnerability.)*

4. Develop the operational approach:

a. *Identify own COG and those of other key stakeholders (friends and allies, neutrals, others), critical requirements, and critical vulnerabilities (i.e., repeat 3.b and 3.c).*
   When applying COG analysis to the friendly force, the COG

will usually be the unit or headquarters of the unit whose commander and staff are conducting the analysis. However, it is important to complete the full analysis because there will sometimes be surprises, and a unit may discover that an ally, neutral, or other actor is actually more important to achieving the unit's mission than the unit itself. In some cases, the friendly unit may need to construct the COG of a partner force. This may be common in security force assistance missions.

    b. Assess and prioritize vulnerabilities for attack or protection.

    c. Determine initial decisive points.

    d. Determine lines of operation or effort.

    e. Decide on and document the operational approach.

    f. Issue guidance and direction.

5. Assess performance and effectiveness:

    a. Monitor

    b. Evaluate

    c. Recommend or direct action.

Acknowledgments

1. Introduction

"Don't fight the problem. Solve it!"
—General George C. Marshall [1]

This Vulnerability Assessment Method Pocket Guide (VAMPG) builds on current U.S. military doctrine by describing a step-by-step process to identify centers of gravity (COGs).[2] Combining current joint and service doctrine with additional techniques, it is intended to help military and civilian practitioners apply the Vulnerability Assessment Method (VAM) to design plans that will accomplish their missions. It is organized as follows. The remainder of this chapter briefly explains the utility of the VAMPG. The following chapter describes the Vulnerability Assessment Method itself. The third chapter explains how the VAM can be integrated into doctrinal military planning processes. A series of appendixes provides various tools and templates that practitioners may find useful when developing plans to implement the analysis derived from the VAM but that are not part of the VAM per se. Perhaps unusually for a "handbook," the VAMPG also includes robust notes and a selected bibliography because it uses a definition of COG that tends to arouse discussion. These resources may be useful to readers who wish to delve more

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[1]   Quoted in David McCullough, *Truman*, New York: Simon & Schuster Paperback, 1992, p. 535.

[2]   Several sections throughout this pocket guide draw directly from current doctrinal publications, especially JP 5-0, 2011, and Army Doctrinal Reference Publication (ADRP) 5-0, *The Operations Process*, May 2012.

deeply into theoretical discussion of the COG and critical-factor analysis.

The VAMPG is likely to be especially useful to complex operations and countering hybrid threats because such activities require broader analysis than the "enemy" and "friendly" forces that are the focus of intelligence during high-intensity combat. Furthermore, in these types of missions, lower-echelon commanders are likely to be given a greater degree of flexibility to deal with a wide range of stakeholders in the operational environment and be given guidance from higher headquarters that is quantitatively less detailed and less precise in terms of specifying objectives and concepts of operation.

The usefulness of the VAMPG for a particular military operation will vary by echelon and type of operation. For conventional defensive and offensive combat operations (combined arms maneuver in current Army doctrine), the VAMPG may have little utility at brigade headquarters and below. For these operations, the higher headquarters will typically assign the mission, designate task organization, and assign specific tasks that will largely define what enemy elements a unit will attack, what resources they may use, and the timing of operations.

During counterinsurgency, stability operations, and missions against hybrid threats (tasks that largely fall within the core competency of wide area security in current Army doctrine), the VAMPG can be a useful tool at the brigade combat team and possibly the battalion or task force level. When the requirements of applying a comprehensive approach, interagency operations, or other civil-military operations (such as the activities of provincial reconstruction teams) are added to the situation, guidance from higher headquarters is likely to be less specific and allow greater latitude in planning. Thus, the VAMPG can be particularly useful for helping to determine the best use of nonlethal resources, such as funding, development efforts, and information assets, as well as the most effective ways of combining these with the application of force when necessary. However, there

are no routine formulas. The creativity of commanders and planners will continue to be at a premium.

The greatest value of the VAM and COG analysis is not that it is a foolproof approach. The COGs derived may not be perfectly valid. Also, COGs may change with time or as conditions change. The value is in the process VAM facilitates. It walks a staff through a learning progression that requires its members to characterize and catalog their understanding of the geopolitical situation as it pertains to their mission and make judgments about what their priorities are. It prompts them to develop a deeper understanding of the environment. Thus, if they find that the COG they have defined is not quite correct after a few weeks, they will not have to start a new analysis from scratch. Following the VAM, they will merely need to update or refine their judgments.

Why Care About Vulnerability Assessment?

Limited resources must be focused on some purpose. For example, if the objective is to get rid of a beehive, it would be more efficient to remove the queen bee rather than swat tens of thousands of worker bees.[3] In a conflict, an organization's resources should be aimed at the primary source of the adversary's ability to frustrate friendly goals, with the main effort directed toward the most important obstacles to, and/or facilitators of, success. Based on a technique the Asymmetric Operations Working Group uses,[4] the VAMPG identifies the critical vulnerabilities

> The VAMPG can help an organization determine the best way to achieve its goals by effectively using its resources against an adversary while protecting friendly vulnerabilities.

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[3]   The authors are grateful to the Naval Postgraduate School's Caitlin Allion Richardson for suggesting this metaphor.

[4]   The Asymmetric Operations Working Group is a joint service, interagency, multinational forum that meets periodically to share asymmetric operations perspectives. It was developed by the U.S. Army Asymmetric Warfare Group with support from

of an adversary, then develops a coherent set of friendly actions to attack these vulnerabilities by means that may be lethal, nonlethal, or a combination of the two.

The VAMPG Is a Problem-Solving Tool

All military activities are, or should be, efforts to solve a problem (see Figure 1). A training schedule attempts to solve the problem of preparing a unit for its missions. An operations order answers the question: "How should we accomplish this mission?" The VAMPG is a way to determine the most effective way to defeat an adversary. It is an analytic tool in the kit of a commander and staff that can help them map and understand their local corner of the universe. As with any tool, it is more suitable to some problems than others. It begins with determining what ends the friendly organization desires to achieve, analyzing the conditions that are preventing the achievement of those ends, and determining what actions are necessary to shift the environment from the current state to the desired state.

Current doctrine is ambiguous regarding the application of design to joint and service planning processes. For the most part, the conceptual planning of design is treated separately from the detailed planning of the Military Decision Making Process (MDMP) and the Joint Operation Planning Process (JOPP), with commanders and staffs being left largely to their own devices to determine how to integrate the two concepts. For example, ADRP 5-0 states: "Depending on the situation—to include the familiarity of the problem—commanders

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the Johns Hopkins University Applied Physics Laboratory. The VAMPG is based on the work of Carl von Clausewitz (*On War*, trans. Michael Howard and Peter Paret, eds., Princeton, N.J.: Princeton University Press, 1976), Joseph Strange (*Centers of Gravity & Critical Vulnerabilities: Building on the Clausewitzian Foundation So That We Can All Speak the Same Language*, Quantico, Va.: Marine Corps War College, 1996), Dale C. Eikmeier ("Modernizing the Center of Gravity Concept—So It Works," in Celestino Perez, Jr., ed., *Addressing the Fog of Cog: Perspectives on the Center of Gravity in US Military Doctrine,* Ft. Leavenworth: Combat Studies Institute Press, 2012b), and the Johns Hopkins University Applied Physics Laboratory ("An Introduction to the Vulnerability Assessment Method: A Practitioner's Handbook," coordinating draft, Laurel, Md., August 17, 2010).

**Figure 1
Problem Solving**
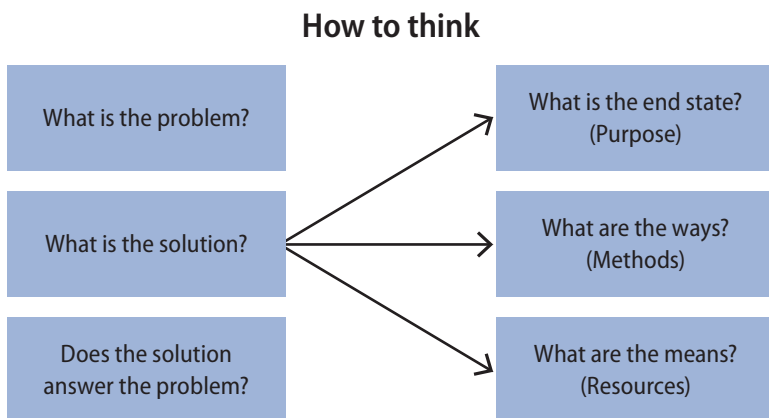
How to think

| What is the problem? | | What is the end state?
(Purpose) |
| What is the solution? | | What are the ways?
(Methods) |
| Does the solution
answer the problem? | | What are the means?
(Resources) |

conduct Army design methodology before, in parallel with, or after the MDMP."[5] In addition to COG analysis, the steps the VAMPG provides are a logical way to integrate design into the MDMP and JOPP processes.

How to Use This Pocket Guide

- Do not get bogged down in theoretical discussions about the concept of COG or "what Clausewitz really meant." The key points are as follows:
  - Determine what aspect of enemy strength (narrowed down to a single physical object, if possible) is most likely to obstruct your mission, then apply your resources against it either directly or indirectly.
  - Determine which elements of your own organization are vulnerable, then protect them.
  - Determine which other actors in the operational environment can affect your ability to accomplish your mission, then enable or hinder them as appropriate.

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[5]   ADRP 5-0, 2012, p. 2-13.

- Apply the parts that are useful for the task at hand. For example, if the adversary COG is obvious or must be assumed to be an objective designated by higher headquarters, analyzing its critical capabilities, critical requirements, and critical vulnerabilities can still be useful in determining a plan of action for attacking it.
- Either incorporate the results of the COG analysis derived in substeps (3.b, 3.c, and 4.a) into the preferred doctrinal planning process for your organization and mission (JOPP, MDMP, Marine Corps Planning Process [MCPP], etc.) or synthesize the steps to best suit your purpose.
- Apply COG analysis to **all** the actors in your area of operations that can influence your ability to accomplish the mission. Do not limit your analysis to only "the enemy."
- The strategic, operational, and tactical levels of war have large areas of overlap. Do not get caught up in theoretical discussions about which sphere a particular task or mission falls into. Commanders must ensure that their own plans nest within those of higher headquarters, but the key is to use the VAMPG to identify the problem the unit or organization faces and to determine a solution that is both within the means of that unit or organization and consistent with the intent of higher-level commanders.

Tools and Templates

The appendixes provide various tools and checklists. Not all will apply to every mission. Users can pick and choose which ones may apply to their particular needs. The appendixes are duplications of, or extracts from, other publications that users of the VAMPG may find helpful in understanding the operational environment and developing plans and orders.

2. Vulnerability Assessment

"Caesar had taken a number of the Veneti's towns by storm, but he realized that his great efforts were all in vain, for he could not check the enemy's flight by capturing towns, nor could he do them any damage."
—Julius Caesar [1]

The VAMPG helps a commander and staff identify what is most important in the adversary and nonadversary systems to avoid wasting resources by pursuing less-productive courses of action. Most of the steps in the VAMPG are already accomplished as a part of Joint Intelligence Preparation of the Operational Environment (JIPOE), JOPP, and Army Design/Operational Art. The major difference is that these doctrinal methods indicate the importance of identifying COGs but do not provide an explicit step-by-step process for doing so.[2]

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[1]   Julius Caesar, *The Gallic War*, trans. Carolyn Hammond, Oxford: Oxford University Press, 1996, pp. 60–61.

[2]   For example, Marine Corps Warfighting Publication (MCWP) 5-1, "Marine Corps Planning Process," August 24, 2010, p. 2-5, states that "COG analysis is a means to focus the commander and staff on what is most important among all the variables and factors that can influence the conduct of operations. Determining COG is an art. At a minimum, commands should think in terms of strengths and weaknesses."

COG analysis is more art than science. Especially in complex operations, there are no routine formulas that planners can always apply to determine a COG. However, the process described in this chapter can be useful when it is difficult to identify COGs. If the adversary COG is obvious or easily identified, it is probably also well protected. In such cases, commanders and staff may find it faster and more productive to start with the COG, then determine critical capabilities, determine critical requirements, and identify critical vulnerabilities.

The VAMPG takes a binary approach that considers an adversary COG, then friendly and other nonadversary COGs. In many situations there may even be multiple friendly, neutral, adversary, and other organizations within the operational environment with each having its own COG(s) that must be analyzed. However, the explication in the VAMPG focuses on identifying the adversary COG because once one has mastered the process of COG identification as applied to the adversary, find-

> Gaining an adequate understanding of the challenges your organization faces requires assessing all the actors that can influence your ability to accomplish the mission, not just the adversary.

ing one's own COG is usually simple at the tactical level—although important. Finding nonadversary COGs can be very difficult. However, finding adversary COGs can be a useful analogy for the process of finding nonadversary COGs.

Key Terms

The following definitions are used in the VAMPG.[3] With the exception of COG, they are consistent with doctrine but not necessarily identical to the terms found in Joint Publication 1-02, *Department of Defense (DoD) Dictionary of Military and Associated Terms*, and the relevant service publications.

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[3]   Revised from Eikmeier, 2012b, pp. 148, 164, and Dale C. Eikmeier, "A Logical Method for Center-of-Gravity Analysis," *Military Review*, September–October 2007, pp. 62–66.

- **Center of gravity (COG)**—This is the primary entity that inherently possesses the critical capabilities to achieve the objective: something that is tangible. It is a "doer" that is capable of achieving the goals of the organization that owns it. As defined in this pocket guide, a COG will be a physical entity capable of accomplishing the organization's ends.[4] In missions entailing combined arms maneuver at the tactical and operational levels, the COG will almost always be a military unit. Contrary to doctrine, it cannot be an intangible quality, such as charismatic leadership or "will of the people," because such intangibles cannot, by and of themselves, accomplish objectives. However, these intangibles might be critical requirements.[5] The definition of COG used in the VAMPG is the "modernized" version Dale C. Eikmeier has proposed.[6] In the VAMPG, the COG must be a tangible, physical entity. Since the VAMPG is intended for use at the tactical and possibly operational levels and since JP 5-0 states that COGs are "mostly physical at the operational and tactical levels," this variation from doctrine is primarily a concern about theory rather than practice.[7]
- **Critical capabilities (CC)**—These are the primary abilities essential to accomplishing the objective that merits a COG to be identified as such within a given context.

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[4]   Eikmeier, 2012b, pp. 148, 164, and Eikmeier, 2007, pp. 62–66. JP 5-0, 2011, p. xxi, defines center of gravity as:

  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. In identifying COGs it is important to remember that irregular warfare focuses on legitimacy and influence over a population, unlike traditional warfare, which employs direct military confrontation to defeat an adversary's armed forces, destroy an adversary's war-making capacity, or seize or retain territory to force a change in an adversary's government or policies.

[5]   Current doctrine and many theorists argue that at the strategic level a COG can be moral or physical. The willingness of the public to support a conflict and the strategic and persuasive abilities of a particular leader are often cited as two examples of moral COGs. Physical COGs are typically military or economic resources such as an air force, an army in the field, or the industrial base that enables production of military goods required to continue a war effort. JP 5-0 indicates that operational and tactical level COGs are more likely to be physical. In conventional combat below the strategic level, the COG is usually an enemy force. At the tactical level, it ought to be the objective of the main effort.

[6]   For example, Eikmeier, 2012b.

[7]   It is also worth noting that there is no consensus in the literature about the existence of COGs at the tactical level, yet JP 5-0, 2011, p. III-23, states that COGs exist at each level of war.

- **Critical requirements (CR)**—These are essential conditions, resources, and means the COG requires to perform the critical capability. These things are used or consumed to carry out action, enabling a critical capability to wholly function.
- **Critical vulnerabilities (CV)**—These are critical requirements or components thereof that are deficient or vulnerable to neutralization, interdiction, or attack in a manner that achieves decisive results.
- **Critical factors analysis**—This is an analytical framework to assist planners in analyzing and identifying COGs and to aid operational planning. The critical factors are the CCs, CRs, and CVs. Along with identification of the COG, critical factors analysis is at the heart of the VAMPG.
- **Ends**—These constitute the goal or objective—the "what"—that an organization intends to accomplish.
- **Ways**—These concepts or actions describe how to apply the means to attain the ends.
- **Means**—These are the resources the selected way to achieve the ends requires.
- **Complex operations**—This is a term of art. While there is no consensus definition, the range of activities in such operations usually includes peace support, counterinsurgency, stability, and humanitarian assistance operations.[8] The most common denominator is the requirement for military forces either to work closely with civilian efforts or to themselves conduct what are typically considered "civilian" tasks because not enough civilian resources are available—usually due to inadequate security.
- **Hybrid threats**—According to ADRP 3-0, a hybrid threat is the "diverse and dynamic combination of regular forces, irregular forces, terrorist forces, and/or criminal elements unified to achieve mutually benefitting effects."[9] The U.S. Government Accountability Office provides the following summary of various DoD publications: "Hybrid warfare blends conventional and irregular warfare approaches across the full spectrum of conflict."[10] Furthermore,

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[8] See Christopher M. Schnaubelt, "NATO and Complex Operations: Introduction," in Christopher M. Schnaubelt, ed., *Complex Operations: NATO at War and on the Margins of War*, Rome: NATO Defense College, Forum Paper No. 14, 2010, pp. 11–14.

[9] Army Doctrine Reference Publication 3-0, *Unified Land Operations*, May 2012, p. Glossary-3.

[10] Government Accountability Office, "Hybrid Warfare," briefing to the Subcommittee on Terrorism, Unconventional Threats and Capabilities, Committee on Armed

a hybrid threat is an "adversary that simultaneously and adaptively employs some fused combination of (1) political, military, economic, social and information means and (2) conventional, irregular, terrorism and disruptive/criminal conflict methods. It may include a combination of state and non-state actors."[11]

Outline of the Five Steps to Applying the VAMPG

The VAMPG uses five steps. To highlight the techniques that complement current doctrine, the outline below indicates in *italics* the substeps that are specific to the VAMPG. The remaining steps are synthesized from U.S. joint and service planning doctrine.

1. Receive mission; understand higher headquarters guidance and strategic direction.
2. Understand the operational environment.
3. Frame and define the problem.
   a. Identify the problem or problem set, then view it as an adversary system.
   b. Determine the adversary COG:
      i. *Identify the organization's desired ends.*
      ii. *Identify "ways" or actions that can achieve the desired ends.*
      iii. *Select the way(s) the organization is most likely to use. This identifies the critical capability(ies).*
      iv. *List the organization's means or resources available or needed to execute the critical capability.*
      v. *Select the entity (tangible agent) from the list of means that inherently possess the critical capability. This is the COG. It is the doer of the action that achieves the ends.*
   c. *Identify the adversary COG's critical requirements, then its critical vulnerabilities:*

Services, House of Representatives Report GAO-10-1036R, September 10, 2010.

[11] U.S. Joint Forces Command, Joint Irregular Warfare Center, working definition 2008–2009, quoted in GAO, 2010.

   i. *From the remaining means select those that are critical for execution of the critical capability. These are the critical requirements.*

   ii. *Complete the process by identifying the critical requirements that are vulnerable to adversary action. These are the critical vulnerabilities.*

4. Develop the operational approach:

  a. *Identify own COG and those of other key stakeholders (friends and allies, neutrals, others), critical requirements, and critical vulnerabilities (i.e., repeat 3.b and 3.c).*

  b. Assess and prioritize vulnerabilities for attack or protection.

  c. Determine initial decisive points.

  d. Determine lines of operation (LOOs) or lines of effort (LOEs).

  e. Decide on and document the operational approach.

  f. Issue guidance and direction.

5. Assess performance and effectiveness:

  a. Monitor

  b. Evaluate

  c. Recommend or direct action.

The remainder of this chapter will focus on the two vulnerability assessment substeps of the VAM: identifying the adversary COG, critical requirements, and critical vulnerabilities and identifying one's own COG, critical requirements, and critical vulnerabilities, as well as those of other key stakeholders (friends and allies, neutrals, others). Chapter 3 will place the specific VAM substeps into the broader context of doctrinal planning.

Determine the Adversary Center of Gravity

The logic underlying COG analysis is to help to understand the operational environment and to define the problem so commanders can determine the best place to focus their efforts. The first key question to ask in this step is: "**center of gravity of what?**" At the lowest level, what single resource or attribute of the adversary is most important to its ability to accomplish its mission or attain its objectives, and

how does it relate to the ability of one's own organization to achieve its goals? However, answering this question first requires understanding what the adversary wishes to accomplish. (This analysis will be repeated later for nonadversary actors.)

A corollary approach is to imagine destroying a single element of the adversary's resources and estimating how this would affect friendly ability to produce the desired end state. ADRP 3-05 advises planners:

> Any adversary COG or nonadversary COG is relevant only in terms of the objectives of one's own organization.

> Visualize the threat as a system of functional components. … To test the validity of centers of gravity, ask the following question: Will the destruction, neutralization, influence, or substantial weakening of the center of gravity result in changing the threat's course of action or in denying its objectives?[12]

It may be sufficient to neutralize or disrupt a COG; in some situations, no greater effect can be achieved with the resources—including time—that are available. However, destruction of the adversary COG is sometimes necessary to achieve the long-term goals of an engagement, battle, operation, campaign, or war.

In some cases, there may be more than one COG at each level, but there typically is only one—especially at the strategic level—during any particular phase of a battle or campaign. However, there may be different COGs during different phases—as will be shown in an example below illustrating an insurgency. If multiple COGs are identified at the same level during the same phase, it usually means that critical capabilities have been mistaken for COGs, and further analysis will narrow the candidates down to a single, correctly identified COG. Additionally, the identification of critical capabilities and critical requirements may lead to reconsidering the candidate for COG that was initially identified.

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[12] ADRP 3-05, *Special Operations*, 2012, p. 4-5.

The joint doctrinal process for identifying the adversary center of gravity falls within step 3 of the JIPOE, Evaluate the Adversary. JP 2-01.3, however, generally treats COG identification as an intelligence process that feeds into, but is somewhat independent of, the process of identifying friendly element actions and directing them against critical vulnerabilities. The first three JIPOE substeps shown in Figure 2 feed understanding of the environment, but step 3 of JIPOE does not *describe* a method to identify the adversary (or friendly) COG although it is listed in JIPOE substep 4, as depicted in Figure 2.

To fill this gap, the VAMPG proceeds as shown in Figure 3. The initial sequence of this process is applied to the adversary in VAMPG

Figure 2
JIPOE Step 3

1. Update or create adversary models
2. Determine the current adversary situation
3. Identify adversary capabilities and vulnerabilities
4. Identify adversary centers of gravity
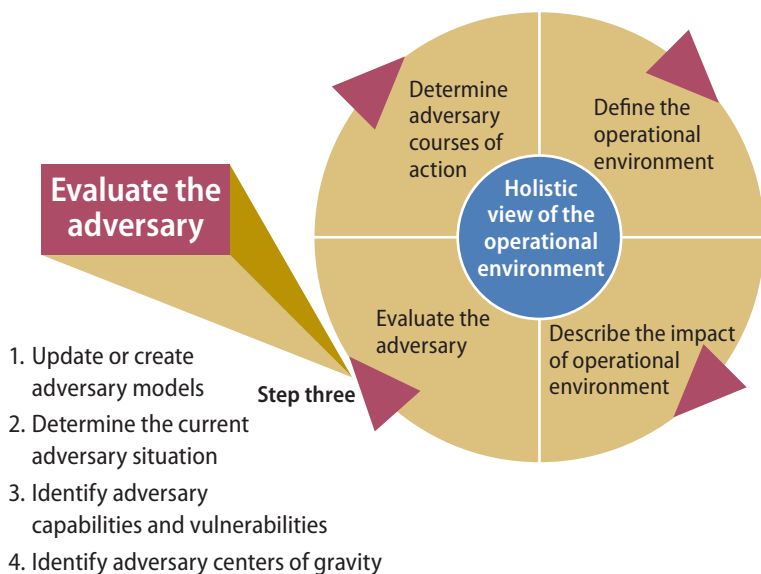
SOURCE: JP 2-01.3, *Joint Intelligence Preparation of the Operational Environment*, June 16, 2009, pp. I-3, I-4, II-44 through II-54, and II-55.
RAND *TL129-2*

Figure 3
Strategic Framework, Critical Factors, and COG

Strategy framework

Ends
The goal or objective
1

Ways
Actions expressed as verbs
2

Means
Resources and requirements, nouns or verbs
3

COG analysis

Ways (verb) = critical capability

Means with the critical capability = COG

4

List resources required to execute the way. The means with the inherent capability to perform the way (critical capability) is the COG. All other means are critical requirements.

1 Identify the goal
2 Identify the primary way
3 List the means and resources
4 Determine COG by selecting from the list the means with the capability to perform the way

Using the strategic framework to identify the COG

SOURCE: Eikmeier, 2007, p. 64.
RAND *TL129-3*

steps 3.b and 3.c. It is repeated in VAMPG step 4.a to identify the friendly, neutral, and other COGs.[13]

The following substeps are used to identify a COG:

- Identify the organization's desired ends. What are the adversary's goals? Examples for various different organizations include
    - replacing the government of country X with an Islamic caliphate

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[13]   Note that "COG = Means" is not the typical construct for a COG. Nonetheless, this approach can produce a valid identification of a COG, as will be demonstrated in later steps.

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- liberating country X
- controlling the oil fields in region Y
- establishing regional hegemony
- imposing Sharia on village Z
- driving coalition forces out of the region.
- Identify possible "ways" or actions that can achieve the desired ends. Examples include
  - conducting an insurgency campaign
  - building partner- or host-nation capacity
  - attacking with conventional military forces
  - conducting acts of terrorism
  - seizing the oil fields in Y
  - destroying enemy forces
  - defending village Z
  - intimidating local leaders
  - controlling smuggling routes
  - bribing officials.
- From the preceding list, select the way(s) that analysis suggests the organization is most likely to use. Identify the most elemental or essential actions. The capabilities required to execute the ways are the critical capabilities.
- List the means or resources available or needed for the organization to execute the critical capability. (When using a system-of-systems analysis, these may be actors or nodes.) Examples for various organizations include
  - a group of foreign fighters
  - a large conventional military formation (e.g., an armored corps)
  - improvised explosive devices
  - local fighters
  - arms and ammunition
  - funds
  - leadership
  - a local support network.
- Select the entity (tangible agent) from the list of means that inherently possesses the critical capability. This is the COG as the VAMPG defines it—the doer of the action that achieves the ends. (In a system-of-systems analysis, it will be the key actor or node.) Examples are provided later in this section.

Identifying the COG will typically be easiest when the adversary is a conventional military formation. The range of possible entities can be

narrowed by analyzing the enemy order of battle (EOB) developed by the Intelligence Section (S-2/G-2/J-2). However, during complex operations and when countering hybrid threats, the adversary organization is likely to be irregular and/or organized into cells or nonhierarchical arrangements and thus likely to present a greater analytical challenge. A conventional armed force will rarely be the COG during complex operations or when countering hybrid threats. Using the insurgency example in following the VAM process provides a useful analogy that can be applied to other complex missions.

Dale C. Eikmeier provided the following short examples of COG analysis for different phases of an insurgency.[14] They should be viewed as brief illustrations of analysis, not a discourse on insurgency theory. Note, however, that they illustrate how COGs may shift between phases of a battle, campaign, or other long-term effort. This implies that counterinsurgency efforts should be adjusted according to the phase of the insurgency. The examples are

- **Conspiratorial phase.** Revolutionary cells and support structures must be in place before a revolution can begin. Putting these in place is the **end state** for the conspiratorial phase. The **way** is to build and motivate (**critical capability**) a force and support base. This is done through ideological indoctrination or conversion and military training and equipping. The **means** capable of this are insurgent cells of true believers. There are two types of such cells: those comprising educators or ideological missionaries and those made up of militant trainers and organizers who form the armed wing. These prerevolutionary cells are the **COG** during the conspiratorial phase because they have the inherent capability to indoctrinate, motivate, and build a revolutionary force.
- **Initiation phase.** Revolutions are not spontaneous; leaders plan and ignite them when they believe the time is right. The initiation phase's **end state**, then, is the start of the revolution. A **way** could be to provoke such a repressive or violent response from the existing authority that the masses rally to the insurgent cause. The **means** that possesses the **critical capability** to provoke would

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[14]   See Eikmeier, 2007, p. 66. Eikmeier presents the phases in reverse chronological order. Furthermore, Mao and his successors would probably argue that the COG is the political structure throughout all phases of insurgency.

be the insurgency's militant cells; hence, they are the **COG** in the initiation phase. Because the force required to start a revolution is much smaller than the force needed to win a revolution, the initiation and revolutionary phase COGs are not the same force. A **critical requirement** for the initiation force is leadership with the skills to correctly decide when to start the revolution.

- **Revolutionary phase.** Before you can establish a new order, you must remove the existing one; thus, removal of the existing order is the **end state** for the revolutionary phase. A **way** to remove the existing order is to force its removal through a revolution (the **critical capability**). The **means** that possesses the critical capability to force removal would be an armed force. This armed force is the revolutionary-phase **COG** because it alone has the critical capability to bring about the end state.

- **Final phase.** The final **end state** the insurgency seeks is to consolidate its victory by establishing a new sociopolitical order based on the movement's ideology. A **way** to establish that order (the **critical capability**) is to have the means, in the form of a revolutionary government, capable of establishing rule and authority. The revolutionary government is therefore the **COG** for this final phase of the insurgency because it possesses the **critical capability** to establish rule and authority for the new order.

Altogether, these examples show that each phase's critical capabilities and the possessor of those capabilities—the COG—can be derived from ends, ways, and means analysis.

The next steps identify the critical requirements, then determine which ones are most vulnerable to action against them.

Identify the Adversary COG's Critical Requirements, Then Its Critical Vulnerabilities

From the remaining means select those that are critical for execution of the critical capability—the critical requirements.[15] These are what the COG requires to perform its critical capability. For example,

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[15] In a system-of-systems analysis, these will be links between actors or nodes. See JP 5-0, 2011, pp. III-10, III-11, and III-22; and JP 2-01.3, 2009, pp. I-3, I-4, and II-44 through II-54.

if the COG is an armored corps and if its critical capabilities are to attack, seize, occupy, and defend, its critical requirements could be command and control, logistics, fires, and maneuver.

Complete the process by identifying the critical requirements that are vulnerable to adversary action. Analyze the critical requirements identified above to determine which are susceptible to attack that would achieve decisive results. For example, if an armored corps has extended lines of communication and if friendly forces have air superiority, the supply lines necessary to feed, fuel, and arm the corps could be a critical vulnerability. Figure 4 illustrates identifying critical factors in interlinked systems.

Figure 5 illustrates the COG Analysis Factors for an example conventional combat mission.

As another example, the adversaries in the COG analysis depicted in Figure 6 are malign actors whose actions benefit the insurgency by undermining the legitimacy of the government. They may not care about overthrowing the host-nation government per se, but their activities impede friendly objectives. The analysis proceeds as follows:

- Determine the adversary COG:
  - Identify the organization's desired ends:
    - Make high personal profits with no risk of arrest or punishment.
  - Identify ways or actions that could obtain desired ends:
    - Operate legal businesses.
    - Invest in interest-bearing financial instruments.
    - Create or maintain a low risk, high reward environment.
    - Control political authorities (government officials, law enforcement, and judges).
  - Select the way(s) the organization is most likely to use (critical capabilities):
    - Create or maintain a low risk, high reward environment.
    - Control political authorities (government officials, law enforcement, and judges).

Figure 4
Analyzing Critical Factors
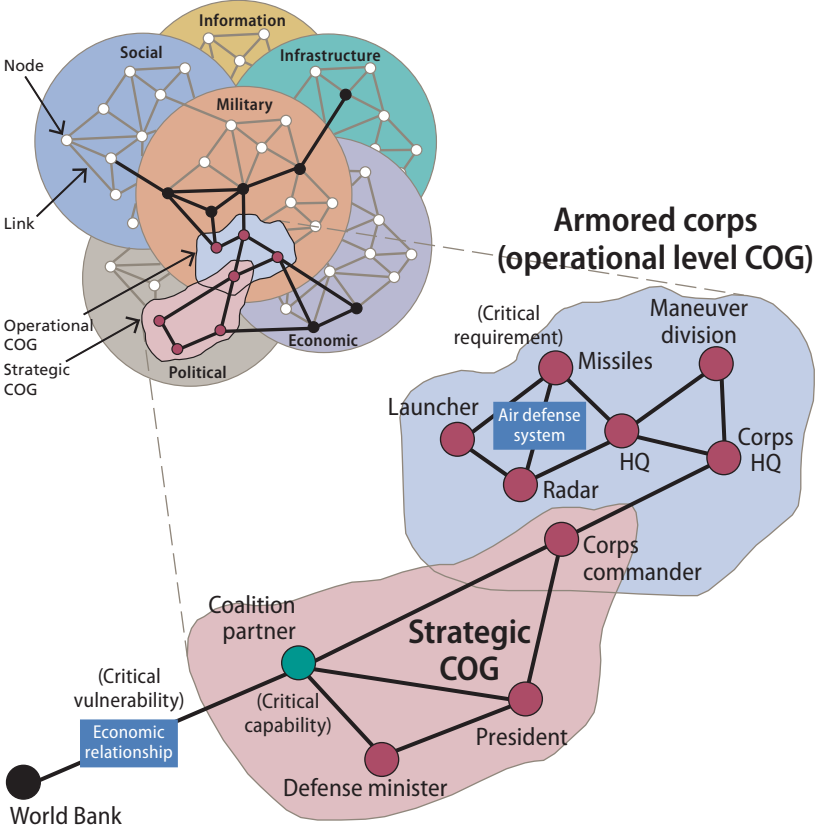
SOURCE: JP 2-01.3, p. II-67.
RAND *TL129-4*

- – List the organization's means or resources needed to carry out the ways (execute critical capabilities):
  - · criminal patronage network
  - · illicit and unaccounted money
  - · government officials look the other way (discretion)
  - · protection from prosecution (culture of impunity)
- – Select the entity (tangible agent) that inherently possesses the critical capability(ies). This is the COG:
  - · criminal patronage network.

Figure 5
Example Center of Gravity Analysis

Country X liberated and sovereignty restored	**Objective or end state**
Attack, destroy, seize, occupy, secure, defend	**Critical capability (CC)** required to obtain the objective
Armored corps	**COG**
C2, logistics, secure lines/flanks, intel, protection, movement and maneuver, legitimacy	**Critical requirements (CRs)** COG required to perform the critical capability
Legitimacy, supply lines	**Critical vulnerabilities (CVs)** subject to adversary action

- Identify the adversary COG's critical requirements, then its critical vulnerabilities:
  - From the remaining means select those that are critical for execution of the critical capability and complete the process by identifying the critical requirements that are vulnerable to action. These are critical requirements that in this example are also critical vulnerabilities. (They are not listed twice, once as a CR and again as a CV, for the sake of brevity.) In this case, they are
    - illicit and unaccounted for money
    - government officials look the other way (discretion)
    - protection from prosecution (culture of impunity).

This illustration also includes an additional substep, **determine potential friendly element actions**, which will be explained during the next step, Develop the Operational Approach:

- Interdict illicit money.
- Account for licit money.
- Provide effective oversight.

Figure 6
COG Analysis of Corruption

"Corruption = monopoly + discretion – accountability"
(Dr. Robert Klitgaard, 1988)

COG
Patronage
network

CC
Low risk
high reward
environment

CC
Control of political
authority

CR
Illicit and
unaccounted
money

CR
Official discretion
(lack) of
oversight)

CR
Culture of impunity
(protection from
prosecution)

CV
Interdict
illicit
money

CV
Account
for licit
money

CV
Effective
oversight

CV
Accountability
of civil
servants

CV
Remove
protection
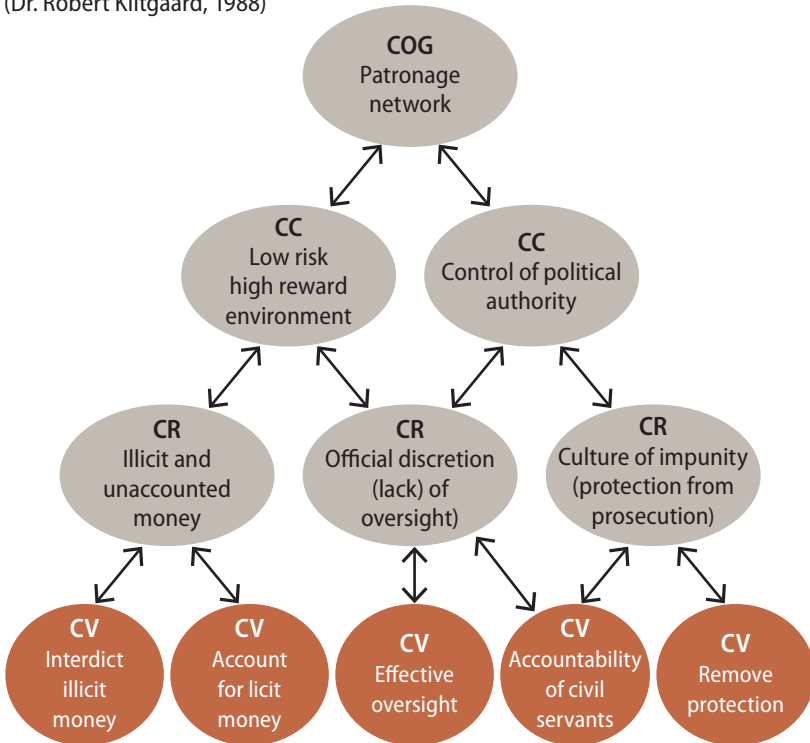
SOURCE: Jan L. Rueschhoff and Johnathan P. Dunne, "Centers of Gravity from the 'Inside Out,'" *Joint Force Quarterly*, No. 60, 1st Quarter 2011, p. 123.
RAND *TL129-6*

- Make civil servants accountable.
- Remove protection from individuals committing illegal acts.

Some other broad examples include:

- Brigade combat teams will rarely operate at the strategic level but may have an area of responsibility that encompasses an entire province or perhaps a country. At the strategic level, the diplomatic, informational, military, and economic elements of national power might be considered as the critical capabilities of a state or regime. Critical requirements for the economic capability could

be revenue, work force, and resources. A critical vulnerability for revenue might be the banking industry, which could be punished for being complicit in illegal activity. (See Figure 7.)

- At the operational and tactical levels, the adversary COG will frequently be a military unit. The six war-fighting functions (command and control, intelligence, fire support, maneuver, logistics, and protection) are good candidates for consideration as the critical capabilities for a regular armed force. Critical requirements for the command and control capability could be leadership and communications. A critical vulnerability for communications might be electronic transmissions that can be intercepted or jammed. (See Figure 8.)

Figure 7
Example Strategic COG Analysis
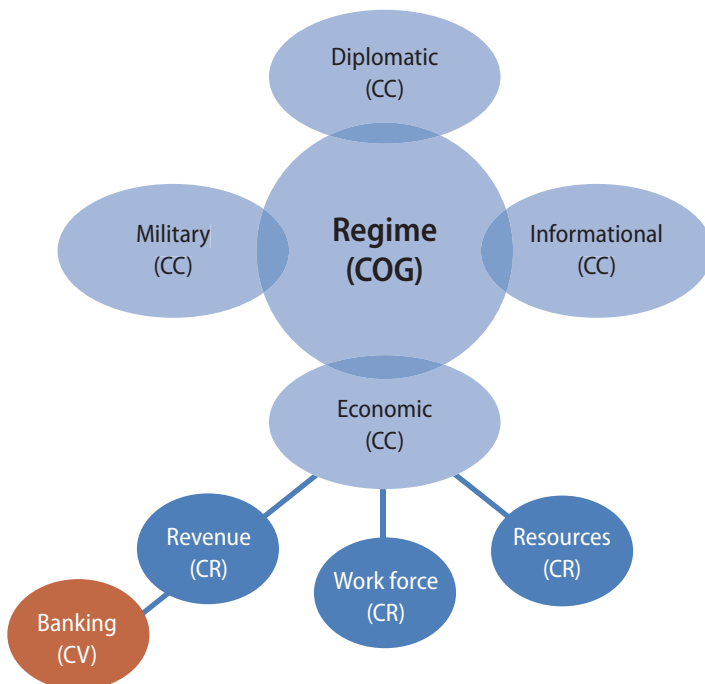
SOURCE: Notes from a Basic Strategic Arts Program course instructed by Michael Matheny (courtesy of Dwight Phillips).
RAND *TL129-7*

Figure 8
Example Operational/Tactical COG Analysis
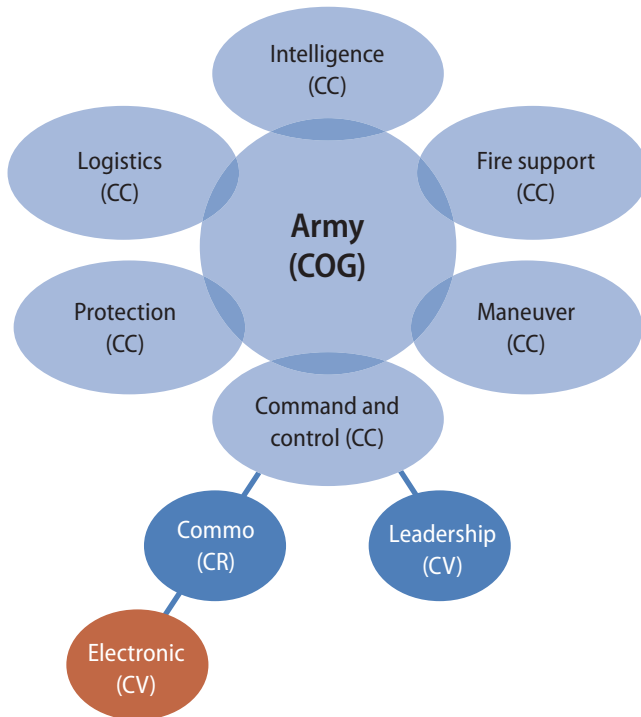
Intelligence
(CC)

Logistics
(CC)

Fire support
(CC)

**Army
(COG)**

Protection
(CC)

Maneuver
(CC)

Command and
control (CC)

Commo
(CR)

Leadership
(CV)

Electronic
(CV)

SOURCE: Notes from a Basic Strategic Arts Program course instructed by Michael Matheny
(courtesy of Dwight Phillips).
RAND *TL129-8*

Identify Own COG and Those of Other Key Stakeholders (Friends and Allies, Neutrals, Others), Critical Requirements, and Critical Vulnerabilities

When applying COG analysis to the friendly force, the COG will usu-
ally be the unit or headquarters of the unit whose commander and
staff are conducting the analysis. Rather than identifying the COG,
the most useful product of this substep will usually be identifying the
critical vulnerabilities so they can be made priorities for protection.
Nonetheless, it is important to complete the full analysis because

there will sometimes be surprises, and a unit may discover that an ally, neutral, or other actor is actually more important to achieving the unit's mission than the unit itself. (This may be common in security force assistance missions.)

"Color coding" of actors as Blue, Green, White, and Red is a technique frequently used to characterize actors but can lead to a counterproductive channelizing of information collection and result in too great a focus on adversaries. The following examples illustrate the pitfalls of this approach:[16]

• A tribal leader (white) is also a member of the part-time district council (sometimes green) and a part-time insurgent financier (kind of red, sometimes).
• A district governor (green) is also a member of a tribe (white) and colludes with insurgents out of fear (kind of red, sometimes).
• An insurgent leader (red) is also a member of a tribe (white). While the insurgent leader is not a member of the government, he is in collusion with the tribal leader in the first example and routinely but quietly threatens the district governor in the second example.

A more useful approach may be to categorize actors along a spectrum according to their behavior, as shown in Figure 9.

The diagram indicates hostile behavior on the right end of the spectrum. Whether lethal or nonlethal, these actions actively undermine friendly objectives. Among other things, such behavior could include

Figure 9
Spectrum of Behavior

Supportive   Nonhostile   Hostile

SOURCE: Connable, 2012, p. 19.
RAND *TL129-9*

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[16] See Ben Connable, "Military Intelligence Fusion for Complex Operations: A New Paradigm," Santa Monica, Calif.: RAND Corporation, OP-377-RC, 2012.

attacking friendly units or indirectly supporting insurgent leaders. Toward the left of the arrow, activities are less overtly opposed to friendly objectives yet are nonetheless unhelpful. Corruption for its own sake rather than to purposely attack the legitimacy of the host nation government would be an example. Instances of supportive activity, shown on the left side of the spectrum, might include positive involvement in the electoral process, honest and ethical behavior by government officials, and proving information to friendly military units or host nation agencies. It should be noted that, in a single day, one actor can engage in multiple behaviors that lie across the entire spectrum.

Permanently categorizing an actor in spot along the spectrum is counterproductive if friendly actions can influence them to move leftward along the arrow. Conversely, the undesired consequences of corruption or when friendly forces cause civilian casualties can result in actors moving from the left side of the arrow toward the right and changing friends into enemies.

Nonetheless, the process for analyzing nonadversary COGs follows the same steps as the analysis of adversary COGs:

- Identify own COG and those of other key stakeholders (friends and allies, neutrals, and others):
    - Identify each organization's desired ends.
      What are the desired ends or objectives of our own organization and those of friends and allies, neutrals, and other key stakeholders?
    - Identify possible "ways" or actions that can achieve the desired ends.
      What courses of action might each of these organizations take to achieve their goals?
    - Select the way(s) that analysis suggests the organizations are most likely to use.
      Identify the most elemental or essential actions; these are the critical capability(ies).

- List each of the means or resources available or needed for the organization to execute the critical capability. (When using a system-of-systems analysis, these will be actors or nodes.)
  - For each organization, select the entity (tangible agent) from the list of means that inherently possess the critical capability. This is the COG for that organization.
    It is the doer of the action that achieves the ends. (In a system-of-systems analysis, it will be the key actor or node.)
- For own COG and those of other key stakeholders, identify critical requirements, then the critical vulnerabilities:
  - From the remaining means, select those that are critical for execution of the critical capability. These are the critical requirements.
  - Complete the process by identifying the critical requirements that are vulnerable to adversary action. These are the critical vulnerabilities.

Assess and Prioritize Vulnerabilities for Attack or Protection[17]

A criticality assessment identifies key assets that are required to accomplish a mission. It addresses how temporary or permanent loss of key assets would affect a unit's ability to conduct its mission. A criticality assessment should also include high-population facilities (recreational centers, mosques, theaters, sports venues), which may not be mission essential. It examines the costs of recovery and reconstitution, including time, expense, capability, and infrastructure support. The staff gauges how quickly a lost capability can be replaced before giving an accurate status to the commander. The general sequence for a criticality assessment is as follows:

- List the key assets and capabilities.
- Determine whether critical functions or combat power can be substantially duplicated with other elements of the command or an external resource.

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[17] This section is extracted from Army Tactics, Techniques, and Procedures (ATTP) 3-39.20, *Police Intelligence Operations*, July 2010, with minimal editing for format.

- Determine the time required to substantially duplicate key assets and capabilities in the event of temporary or permanent loss.
- Set priorities for the response to threats toward personnel, physical assets, and information.

A protection cell should continuously update the criticality assessment during the operations process. As the staff develops or modifies a friendly course of action, information collection efforts confirm or deny information requirements. As the mission or threat changes, initial criticality assessments may also change, increasing or decreasing the subsequent force vulnerability. The protection cell monitors and evaluates these changes and begins coordination among the staff to implement modifications to the protection concept or recommends new protection priorities. Priority intelligence requirements, running estimates, measures of effectiveness (MOEs), and measures of performance (MOPs) are continually updated and adjusted to reflect the current and anticipated risks associated with the operational environment.

A vulnerability assessment is an evaluation of the magnitude of a threat or hazard effect against an installation, personnel, unit, exercise, port, ship, residence, facility, or other site. It identifies the areas of improvement necessary to withstand, mitigate, or deter acts of violence or terrorism. The staff addresses who or what is vulnerable and how it is vulnerable. The vulnerability assessment identifies physical characteristics or procedures that render critical assets, areas, infrastructures, or special events vulnerable to known or potential threats and hazards. Vulnerability is the component of risk over which the commander has the most control and greatest influence. The general sequence of a vulnerability assessment is as follows:

- List assets and capabilities and the threats against them.
- Determine the common criteria for assessing vulnerabilities.
- Evaluate the vulnerability of assets and capabilities.

Vulnerability evaluation criteria may include the degree to which an asset may be disrupted, quantity available (if replacement is required

due to loss), dispersion (geographic proximity), and key physical characteristics.

DoD has created several decision support tools to perform criticality assessments in support of the vulnerability assessment process. These include mission, symbolism, history, accessibility, recognizability, population, and proximity (MSHARPP) and criticality, accessibility, recuperability, vulnerability, effect, and recognizability (CARVER). The following are brief overviews. Greater detail can be found in Appendix C and ATTP 3-39.20.

Mission, Symbolism, History, Accessibility, Recognizability, Population, and Proximity

MSHARPP examines seven variables: mission, symbolism, history, accessibility, recognizability, population, and proximity. It is a targeting tool geared toward assessing personnel vulnerabilities but can also be used for facilities, units, or other assets. A matrix is built according to the example shown in Table 1. Each asset is assigned a number (ranging from 1 through 5) that corresponds to the applicable MSHARPP variable. The number 5 represents the greatest vulnerability or likelihood of attack; the number 1 represents the lowest vulnerability. The respective numerical values are totaled to provide a relative value as a target or the overall level of vulnerability.

Criticality, Accessibility, Recuperability, Vulnerability, Effect, and Recognizability

Another assessment tool used to determine criticality and vulnerability examines the six variables of CARVER. U.S. Special Forces developed the CARVER matrix to target enemy infrastructure. This tool focuses on the enemy's viewpoint to enable an analyst or assessment team to determine the hardness or softness of assets in criminal or terrorist actions. Using the CARVER method, a matrix is developed for each asset. The assets are evaluated against a criteria list. The criteria (Table 2) can be tailored and the relative values manipulated, based

Table 1
Example of an MSHARPP Matrix

Target	M	S	H	A	R	P	P	Total	Threat Weapon
Headquarters building	5	4	5	1	3	4	1	23	4,000-pound, vehicle-borne improvised explosive device
Troop barracks	2	4	5	4	4	4	2	25	220-pound, vehicle-borne improvised explosive device
Communications center	5	4	2	3	5	3	1	23	4,000-pound, vehicle-borne improvised explosive device
Emergency operations center	3	3	2	4	4	4	2	22	50-pound satchel charge
Fuel storage facility	4	3	1	5	5	1	3	22	Small-arms ammunition and mortars
Airfield	5	5	3	2	5	5	4	29	Mortars and rocket-propelled grenades
Ammunition supply point	5	5	1	1	5	3	1	21	Small-arms ammunition and mortars
Water purification facility	5	2	3	5	5	0	4	24	Chemical, biological, and radiological contamination

SOURCE: ATTP 3-39.20 (FM 3-19.50), p. 5-18.

on mission or operational needs (as long as consistency is maintained throughout the matrix). Table 3 is an example of a CARVER criteria matrix.

This chapter provided details on conducting specific aspects of the VAM. The next chapter will show how they can be performed in the context of deliberate planning processes, such as the MDMP and JOPP.

Table 2
Example CARVER Criteria

Criteria	Relative Value Rating
Criticality	
Immediate output halt or 100 percent curtailment. Target cannot function without asset.	10
Halt less than 1 day or 75 percent curtailment in output, production, or service.	8
Halt less than 1 week or 50 percent curtailment in output, production, or service.	6
Halt in more than 1 week and less than 25 percent curtailment in output, production, or service	4
No significant effect.	1
Accessibility	
Standoff weapons can be deployed.	10
Inside perimeter fence, but outdoors.	8
Inside a building, but on a ground floor.	6
Inside a building, but on the second floor or in basement. Climbing or lowering is required.	4
Not accessible or only accessible with extreme difficulty.	1
Recuperability	
Replacement, repair, or substitution requires 1 month or more.	10
Replacement, repair, or substitution requires 1 week to 1 month.	8
Replacement, repair, or substitution requires 72 hours to 1 week.	6
Replacement, repair, or substitution requires 24 to 72 hours.	4
Same-day replacement, repair, or substitution.	1
Vulnerability	
Vulnerable to long-range target designation, small arms, or charges (weighing 5 pounds or less).	10
Vulnerable to light antiarmor weapons fire or charges (weighing 5 to 10 pounds).	8
Vulnerable to medium antiarmor weapons fire, bulk charges (weighing 10 to 30 pounds), or carefully placed smaller charges.	6
Vulnerable to heavy antiarmor weapons fire, bulk charges (weighing 30 to 50 pounds), or special weapons.	4

Table 2—Continued

Invulnerable to all but the most extreme targeting measures.	1
Effect (on the population)	
Overwhelming positive effects, but no significant negative effects.	10
Moderately positive effects and a few significant negative effects.	8
No significant effects and remains neutral.	6
Moderate negative effects and few significant positive effects.	4
Overwhelming negative effects and no significant positive effects.	1
Recognizability	
Clearly recognizable under all conditions and from a distance and requires little or no personnel training for recognition.	10
Easily recognizable at small-arms range and requires little personnel training for recognition.	8
Difficult to recognize at night during inclement weather or might be confused with other targets or target components. Some personnel training required for recognition.	6
Difficult to recognize at night or in inclement weather (even in small-arms range). The target can easily be confused with other targets or components and requires extensive personnel training for recognition.	4
The target cannot be recognized under any conditions, except by experts.	1

SOURCE: ATTP 3-39.20 (FM 3-19.50), p. 5-19.

Table 3
Example CARVER Matrix

Potential Targets	C	A	R	V	E	R	Totals
Commissary	5	7	10	8	8	10	48
Headquarters	1	4	10	8	6	6	35
Communications Center	10	10	6	8	3	4	41

SOURCE: ATTP 3-39.20 (FM 3-19.50), p. 5-20.

3. VAM in the Context of Military Planning

"In preparing for battle, I have always found that plans are useless but planning is indispensable."
—General Dwight Eisenhower [1]

The VAMPG expands on the center of gravity analysis found in Joint, Army, and Marine Corps doctrine as a logical method for deciding where to focus friendly efforts.[2] It can be applied as an element of the JOPP,[3] the MDMP,[4] or the MCPP[5] and is particularly useful during complex operations or for countering hybrid threats. Figure 10 overlays the key aspects of the VAMPG on the JOPP to highlight where the steps occur in the standard planning process. Table 4 indicates how the steps of the VAMPG align with the planning processes described in JP 5-0, ADRP 5-0, and MCWP 5-1.

The VAMPG uses five steps to incorporate vulnerability assessment into the planning process as shown in the sections of this chapter. To specify where it provides recommended techniques that comple-

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[1] Quoted in Thomas Doherty, "Failing to Plan Is Planning to Fail: When CONOPs Replace OPORDs" *Small Wars Journal*, August 28, 2012.

[2] This guide is focused on land-based missions, although they may include the use of air, space, and maritime resources. Nonetheless, the VAMPG process can also be used for air force and naval operations.

[3] JP 5-0, 2011, p. III-24.

[4] ADRP 3-0, 2012, pp. 2-4 to 2-6, and ADRP 5-0, 2012, p. 2-4.

[5] MCWP 5-1, 2010, pp. 2-4 and 2-5.

Figure 10
VAMPG and the Joint Operation Planning Process

Function 1: Strategic guidance	**Step 1** Initiation	
	Step 2 Mission analysis	Approved mission
Adversary COG analysis		
	Step 3 COA development	**Friendly COG analysis**
Function 2: Concept development	**Step 4** COA analysis and war-gaming	
	Step 5 COA comparison	
	Step 6 COA approval	Approved concept
Function 3: Plan development	**Step 7** Plan or order development	Approved plan
Function 4: Plan assessment	**Assessment**	Refine/adapt, terminate, or execute

SOURCE: Michael Santacroce, *Planning for Planners*, Vol. 1: *Joint Operation Planning Process*, 2011.
RAND *TL129-10*

ment current doctrine, the outline below indicates in italics the steps of the VAM. The other steps are synthesized from U.S. joint and service planning doctrine.

It is important to recognize that using the VAMPG and related analysis and planning processes *are not linear procedures*. Although there is no logical way to provide instruction on using the VAMPG other than a step-by-step description, commanders and staffs must, in practice, be prepared to repeat steps and/or execute them in a different order based on the current understanding of the situation—which should continually be updated as new information comes in.[6] For example, thinking through or war-gaming possible courses of action (options)

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[6]   Similar to maintaining a running estimate. See ADRP 5-0, p. 1-15, and ATTP 5-01, Chapter 6.

Table 4
Comparison of VAM and Existing Planning Process Steps

VAM	JOPP	MDMP	Marine Corps Planning Process
Receive mission; understand higher headquarters guidance and strategic direction	Initiation	Receipt of mission	Problem framing
Understand the operational environment Frame and define the problem *Adversary COG*	Mission analysis	Mission analysis	Problem framing
Develop the operational approach *Friendly COG*	COA development	COA development	COA development
	COA analysis and war gaming	COA analysis and war gaming	COA analysis and war gaming
	COA comparison	COA comparison and decision	COA comparison and decision
	COA approval	COA approval	COA comparison and decision
	Plan or order development	Orders production/ development	Orders production/ development
Assess performance and effectiveness	Assessment		Transition

SOURCE: JP 5-0, ADRP 5-0, and MCWP 5-1.

may produce a different view of critical requirements and critical vulnerabilities, or assumptions about the adversary may prove to be invalid, and what was previously thought to be a critical capability may turn out not to be. Even after the actions decided on are taken, the VAMPG cycle should continue to assess whether the desired results were obtained and plans thus adjusted as necessary. While "Assess performance and effectiveness:" is listed last, it should be a continuing process that compares the effects actually produced to those predicted or desired, and the plan should be adjusted if it has not delivered the expected outcomes. Furthermore, as decision points and LOOs or LOEs are developed, planners should think about how their effects can be assessed.

Step 1: Receive Mission; Understand Higher Headquarters Guidance and Strategic Direction

The following questions should be answered during this step:
- What strategic or other guidance is relevant to our mission?
- What specific tasks are our higher headquarters telling us to accomplish?
- What implied tasks must we must perform to achieve these specific tasks or the broader mission?

Commanders and staff must first understand what ends the friendly unit wishes to achieve. These will be determined from a variety of sources. The operations orders or other guidance from the higher headquarters will typically be among the most important. However, guidance can take many forms. The most important aspect of guidance is to provide the purpose and focus for the mission to be accomplished.

For example, during the MDMP, a unit normally draws on the order from the next higher headquarters while looking to the commander's intent two levels higher. From the higher headquarters order, the

staff identifies specified and implied tasks. The unit is attempting to fully answer the question: **"What are we being told to do?"**

For complex operations, the next higher headquarters' order may be insufficient. National guidance, theater strategy, and theater plans may be additional sources of guidance for determining what needs to be accomplished. One example of higher guidance that applied to all echelons of an organization rather than just one or two levels down was the counterinsurgency guidance General Stanley McChrystal issued in 2009. Its key points were that "Protecting people is the mission. The conflict will be won by persuading the population, not by destroying the enemy. ISAF [International Security Assistance Force] will succeed when GIROA [Government of the Islamic Republic of Afghanistan] earns the support of the people."[7] Although issued from a four-star headquarters atop numerous echelons of command, this guidance directly shaped planning at the brigade, battalion, company, and platoon levels.

Steps 1 and 2 of the VAMPG tend to overlap because friendly forces are not independent, inert entities. They are actors within the operational environment that both influence and are influenced by other actors. The analysis developed in Step 1 (Receive Mission; Understand Higher Headquarters Guidance and Strategic Direction) plus that in Step 2 (Understand the Operational Environment) help to inform Step 3 (Frame/Define the Problem) and answer the question **"what do we need to do?"**

At the end of the "Receive Mission; Understand Higher Headquarters Guidance and Strategic Direction" step, leaders and planners should understand the desired end state or conditions that their mission is expected to achieve or facilitate.

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[7]   Headquarters, International Security Assistance Force, "ISAF Commander's Counterinsurgency Guidance," 2009.

Step 2: Understand the Operational Environment

The following questions should be answered during this step:
- Who are the key stakeholders—the actors who can influence whether the desired end state or conditions are achieved?
- For the adversary's, partner's, and U.S. forces' political, military, economic, social, infrastructure, and information (PMESII) operational variables, what are the key areas, structures, capabilities, organizations, people, and events (ASCOPE)?
- What is the nature of the conflict?
- What are the key variables, and how do they interact to shape the current and future environments?
- Are there key nodes or convergences within the environment that can be attacked, protected, or influenced to create disproportionate effects?

A sufficiently robust understanding of the current environment is necessary to define the problem successfully. Commanders and staff should ask this question: **"What is the holistic context that will help us to understand our particular challenges?"** They must fully understand the objectives of their own organization, including their higher headquarters; understand who the adversary is, have a satisfactory understanding of the adversary's goals, and understand how various environmental factors affect friendly and adversary activities.

In doctrinal U.S. military planning processes, this knowledge is developed through JIPOE and the mission analysis step of the JOPP, through intelligence preparation of the battlefield or battlespace and the mission analysis step of the Army's MDMP,[8] or during problem framing in the U.S. Marine Corps Planning Process. However, an especially strong appreciation of nonmilitary actors is necessary

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[8] Because U.S. Army Field Manual 2-01.3/Marine Corps Reference Publication 2-3A, *Intelligence Preparation of the Battlefield/Battlespace*, December 8, 2010, is not available to the general public, it is not quoted within this pocket guide. However, while FM 2-01.3/MCRP 2-3A focuses at the ground component tactical level it is consistent with JP 2-01.3, 2009, which has no distribution restrictions. Therefore, following the processes found in the JP 2-01.3 as referenced in this pocket guide will not contradict FM 2-01.3/MCRP 2-3A.

during complex operations and countering hybrid threats. Therefore, the doctrinal planning manuals should be supplemented with the cultural analysis found in Appendix D of this pocket guide.

Design helps to link together understanding of the desired ends, understanding of the operational environment, and understanding or framing the problem to enable leaders and planners to determine which actions to take. JP 5-0 states that "Operational design is a process of iterative understanding and problem framing that supports commanders and staffs in their application of operational art with tools and a methodology to conceive of and construct viable approaches to operations and campaigns."[9] Figure 11 depicts this task, illustrating the second step of the JOPP. However, note that identification of the friendly and enemy COGs was originally shown in the JOPP as outputs of understanding the operational environment. In this pocket guide, they are instead embedded in steps 3.b and 4.a—these are more logical locations in the process, given that an adequate level of understanding must be developed before proceeding to COG analysis.

Military commanders and staffs conducting complex operations will frequently have to coordinate and jointly plan with civilian leaders and teams from organizations such as the U.S. Agency for International Development or the U.S. Department of State. However, there is no widely agreed-on process for developing plans and strategies for civilian organizations. The Department of State has no equivalent to the JOPP.[10] Nonetheless, the key requirement is to gather *information and relate it to conditions and actors*. In conventional combat operations at the tactical level, understanding the situation will primarily involve knowledge of the friendly mission; the enemy's organization, doctrine, and disposition; the terrain; and the troops and time available.

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[9]   JP 5-0, 2011, p. III-1.

[10]   However, the U.S. Department of State, the U.S. Agency for International Development, and DoD have jointly developed a draft, "3D Planning Guide: Diplomacy, Development, Defense," predecisional working draft, July 31, 2012.

Figure 11
Understanding the Operational Environment

Key inputs		Key outputs

Strategic guidance
Nature of the conflict
Relevant history
Physical and information factors of the air, land, maritime, and space domains and the information environment
PMESII analysis
  • Opposing
  • Neutral
  • Friendly

Understanding the operational environment →

Description of the current operational environment
  • Systems perspective of the operational environment
  • Impacts of physical and information factors on the operational environment
  • ~~Friendly/enemy COGs~~
Description of the desired operational environment
  • Military end state
  • Termination criteria
Description of the opposing end states

SOURCE: JP 5-0, p. III-8.
NOTES: All inputs and outputs are reviewed throughout the planning process and updated as changes occur in the operational environment, the problem, or the strategic guidance.
RAND *TL129-11*

At higher military echelons and for complex operations and countering hybrid threats, understanding the situation requires more:

> to explain the qualitative relationships embedded within complex problems, including their history, dynamics, propensity, and trends [but nonetheless recognize] that complete knowledge is not achievable, and therefore constantly questions the limits of existing knowledge and prevailing public myths or paradigms.[11]

Such analysis requires more than the simple collation of facts or assumptions: It requires understanding the key "systems" effecting the operational environment. JP 3-0 defines a system as a "func-

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[11] See U.S. Army Training and Doctrine Command (TRADOC) Pamphlet 525-5-500, "Commander's Appreciation and Campaign Design," January 28, 2008, p. 15.

tionally, physically, and/or behaviorally related group of regularly interacting or interdependent elements; that group of elements forming a unified whole."[12] One approach to analyzing a system is to examine the interaction of key political, sociocultural, economic, military, geographical, and historical factors. Multiple systems will be present in the operational environment. Instead of examining only the adversary, VAMPG users must analyze all the actors and systems that can affect operational outcomes.

At the most basic level, any intervention is about changing the behavior of an actor or actors in a system. (Even conventional military combat operations on the right side of the spectrum of conflict are intended to force an enemy to cease offensive operations, withdraw, or surrender.) This places a premium on knowledge about the key stakeholders and their points of view, capabilities, and interactions.

A good starting point might be to ask: "What can we not control?" This leads to other useful questions, such as: "What can we control?" "What can we influence?" (In complex operations and those against hybrid threats, "influence" is more likely to be the degree of local power that U.S. forces can exercise rather than "control.") "What conditions are more susceptible to our influence?" It is important to avoid what Ben Zweibelson describes as the thinking that "over-simplifies complex systems and sets up the military organization for tactical success with strategic failure because the world is not as malleable as the detailed planning expects it to be."[13]

A holistic view, such as that in Figure 12, can be a useful starting point for depicting key aspects of the situation. However, it greatly oversimplifies the reality of the contemporary operational environ-ment. Such diagrams should be viewed as conceptual building blocks that broadly illustrate how different systems and conditions may fit together. They cannot be accurate maps of any particular

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12   JP 3-0, *Joint Operations*, August 11, 2011, p. GL-17.

13   Ben Zweibelson, "Design Theory and the Military's Understanding of Our Com-plex World," *Small Wars Journal*, August 7, 2011, p. 9.

Figure 12
Holistic View of the Operational Environment
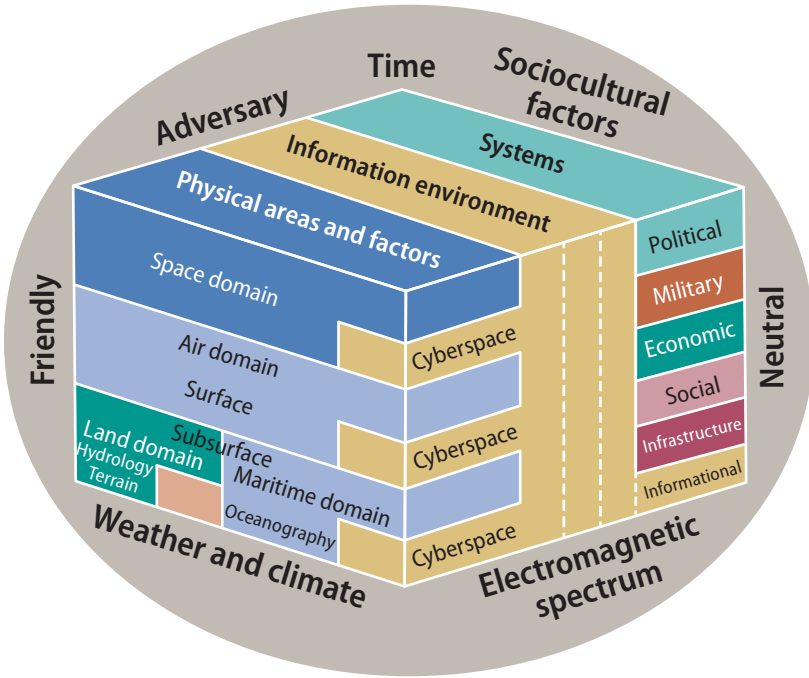
environment and set of actors. Given the tendency of military culture to rely on PowerPoint briefings, one must be wary of the explanatory value of any chart or diagram. Detailed narrative analysis will be required to develop an adequate appreciation of the situation.[14]

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[14] Nonetheless, Ben Connable writes: "It is necessary to note that no analytic effort, whether by the intelligence staff or experts in complex environments, could hope to adequately explain the COIN [counterinsurgency] environment as it actually exists for decisionmaking. A detailed and carefully constructed ethnographic study of one small segment of a society would take years to complete and analyze, and even a study of this kind could not hope to inform all aspects of military decisionmaking. Studies of subcultures in the COIN environment that are completed in days, weeks, or even months are a poor substitute for actual research and constitute little more than a minor addition to the pool of available intelligence information. This pool of information will always be incomplete, inaccurate to varying degrees, and difficult to analyze." (Connable, 2012, p. 18.)

Culture, in particular, is a key element of the operational environment. As part of building their situational understanding, commanders must consider how culture (both their own and others within an operational area) affects operations. Culture consists of the shared beliefs, values, norms, customs, behaviors, and artifacts members of a society use to cope with the world and each other. Culture influences how people make judgments about what is right and wrong and how they assess what is important and unimportant. Culture provides a framework for thought and decisions. What one culture considers rational, another culture may consider irrational. Understanding the culture of a particular society or group within a society can significantly improve the ability to accomplish the mission.

Understanding other cultures applies to all operations, not just operations dominated by stability. Leaders are mindful of cultural factors in four contexts:

- awareness of how one's own culture affects how one perceives a situation
- awareness of the cultures within a region where the unit operates
- awareness of how history has shaped the culture of a region where the unit operates
- sensitivity to the different backgrounds, traditions, and operational methods of the various unified action partners.

Effective leaders understand and appreciate their own culture (individual, military, and national) in relation to the various cultures of others in the operational area. Just as culture shapes how other groups view themselves and the world around them, culture shapes how commanders, leaders, and soldiers perceive the world. Individuals tend to interpret events according to the principles and values intrinsic to their culture. Effective commanders acknowledge that their individual perceptions greatly influence how they understand situations and make decisions. Through reflection, collaboration, and analysis of differences between their culture and the cultures in the operational area, commanders expose and question their assumptions about the situation.

Understanding the culture of unified action partners is crucial to building mutual trust and shared understanding. Army leaders take the time to learn the customs, as well as the doctrine and procedures, of their partners. These leaders consider how culture influences the situational understanding and decisionmaking of their military and civilian partners.

Greater understanding might also be gained through system-of-systems analysis—an approach that examines key adversary subsystems, such as PMESII elements, and determines how they interact to create a larger system that includes the adversary, as well as friendly, neutral, and other actors. Further analysis identifies key nodes that are linkages within (among subsystems) and between the PMESII elements (the system of systems). Figure 13 illustrates the interrelation-

Figure 13
System Perspective of the Operational Environment
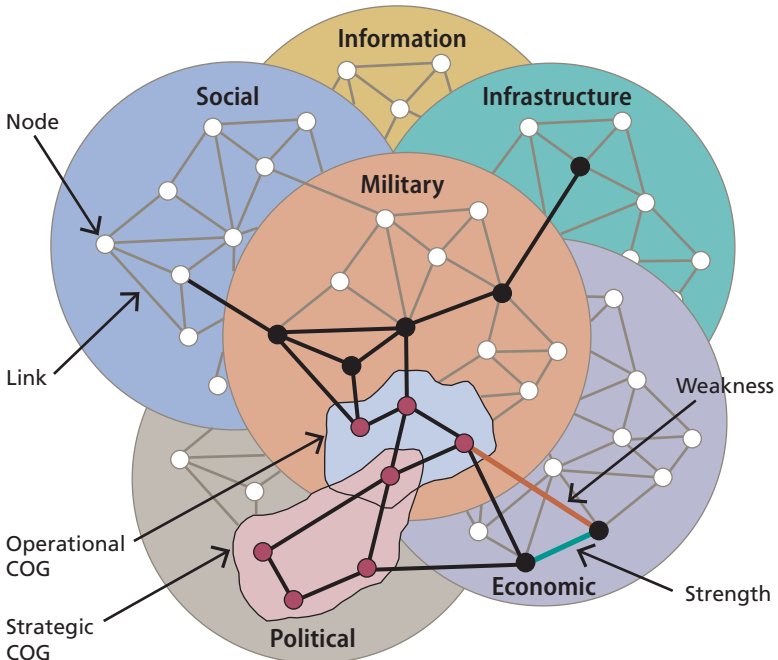
SOURCE: JP 2-01.3, p. II-45.
RAND *TL129-13*

ships. Action against these key nodes can produce synergistic effects that cause broad disruption within subsystems or the larger system of systems that far exceeds the damage to the particular node. The VAMPG can help its users identify these key nodes and thus enable the production of effects that weaken, disable, or defeat the subsystems or system.

JIPOE, as described in JP 2-01.3, produces large volumes of analysis, typically in preparation for joint force operations. Brigades and battalions may not have such robust resources for analysis within their headquarters or focused on their particular area of operations. However, Army design methodology provides a simpler approach to systems analysis that can be performed at the battalion and higher levels. Figure 14 provides an overview of this methodology.

Figure 14
Army Design Methodology

Frame an operational environment
Current state   Desired end state

What is going on?
Understand the current conditions of the operational environment

What should the environment look like?
Visualize desired conditions of the operational environment

Frame the problem

What obstacles are impeding progress toward the desired end state?

Develop an operational approach

What broad general actions will resolve the problem?

Develop the plan

Using the military decisionmaking process

Continuous assessment and reframing as required

SOURCE: ADRP 5-0, p. 2-6.

RAND TL129-14

U.S. Army design methodology and application of operational art include framing the operational environment and the problem. Design methodology and operational art inform the implementation of the VAMPG and development of its products but are not specific steps within the VAMPG. Understanding the operational environment begins with analyzing the context of the situation, in accordance with guidance and direction from a higher authority. Leaders and planners begin by identifying key systems and capturing the history, culture, current state boundaries, alliances and coalitions, and future goals of relevant actors to describe the present conditions using text and/or graphic depictions. They consider the characteristics of mission variables shown in Table 5 and the operational variables (PMESII plus physical environment and time) shown in Table 6 that are relevant to a particular operational environment. This includes identifying and explaining behaviors of relevant actors in the operational environment.[15]

The results of this analysis can be depicted in narrative form and/or by a sketch, as in the example from ADRP 5-0 shown in Box 1.

When countering hybrid threats or during counterinsurgency, stability, and other complex operations that entail a significant amount of activity other than conventional combat, it is especially important to develop a holistic appreciation of the environment that includes all the actors (adversary, friendly, neutral, and others) who may influence mission accomplishment.

However, such missions typically cannot rely on a set template. They place a premium on art over engineering. Commanders and staffs should be wary of attempts to pound the square pegs of diverse civilian populations, host-nation agencies, humanitarian actors, international organizations, and even criminal patronage networks into the round holes, such

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[15] An actor is an individual or group within a social network who acts to advance personal interests. Relevant actors may include individuals, states and governments, coalitions, terrorist networks, and criminal organizations. They may also include multinational corporations, nongovernmental organizations, and others able to influence the situation (ADRP 5-0, p. 2-7).

Table 5
Mission Variables

Variable	Description
Mission	Commanders and staffs view all the mission variables in terms of their impact on mission accomplishment. The mission is the task, together with the purpose, that clearly indicates the action to be taken and the reason therefore. It is always the first variable commanders consider during decisionmaking. A mission statement includes the "who, what, when, where, and why" of the operation.
Enemy	The second variable to consider is the enemy—dispositions (including organization, strength, location, and tactical mobility), doctrine, equipment, capabilities, vulnerabilities, and probably courses of action.
Terrain and weather	Terrain and weather analysis are inseparable and directly influence each other's impact on military operations. Terrain includes natural features (such as rivers and mountains) and man-made features (such as cities, airfields, and bridges). Commanders analyze terrain using the five military aspects of terrain expressed in the memory aid OAKOC: observation and fields of fire, avenues of approach, key and decisive terrain, obstacles, and cover and concealment. The military aspects of weather include visibility, wind precipitation, cloud cover, temperature, and humidity.
Troops and support available	This variable includes the number, type, capabilities, and condition of available friendly troops and support. These include supplies, services, and support available from joint, host nation, and unified action partners. They also include support from civilians and contractors employed by military organizations, such as the Defense Logistics Agency and the Army Materiel Command.
Time available	Commanders assess the time available for planning, preparing, and executing tasks and operations. This includes the time required to assemble, deploy, and maneuver units in relationship to the enemy and conditions.
Civil considerations	Civil considerations are the influence of man-made infrastructure, civilian institutions, and activities of the civilian leaders, populations, and organizations within an area of operations on the conduct of military operations. Civil considerations comprise six characteristics, expressed in the memory aid ASCOPE: areas, structures, capabilities, organizations, people, and events.

SOURCE: ADRP 5-0, p. 1-9.

Step 2

as "enemy forces" and "friendly forces," found in templates that were originally developed for fighting a Soviet-style army.

Table 6
Operational Variables

Variable	Description
Political	Describes the distribution of responsibility and power at all levels of governance—both formally constituted authorities and informal or covert political powers
Military	Explores the military and paramilitary capabilities of all relevant actors (enemy, friendly, and neutral) in a given operational environment
Economic	Encompasses individual and group behaviors related to producing, distributing, and consuming resources
Social	Describes the cultural, religious, and ethnic makeup within an operational environment and the beliefs, values, customs, and behaviors of society members
Information	Describes the nature, scope, characteristics, and effects of individuals, organizations, and systems that collect, process, disseminate, or act on information
Infrastructure	Is composed of the basic facilities, services, and installations needed for the functioning of a community or society
Physical environment	Includes the geography and man-made structures, as well as the climate and weather in the area of operations
Time	Describes the timing and duration of activities, events, or conditions within an operational environment, as well as how the timing and duration are perceived by various actors in the operational environment

SOURCE: ADRP 5-0, p. 1-7

Commanders and staffs next determine the desired end state and supporting conditions, describing the sought-after future state of the operational environment, envisioning desired conditions of an operational environment (a desired end state). A desired end state consists of the conditions that, if achieved, meet the objectives of policy, orders, guidance, and directives from higher authorities. A condition reflects the existing state of the operational environment. Thus, a desired condition is a sought-after future state of the operational environment. Commanders and staffs also identify relationships and significant influences among relevant operational variables and actors, their tendencies, and the potential that they will manifest within the operational environment.

Box 1
Example Current State of Environment
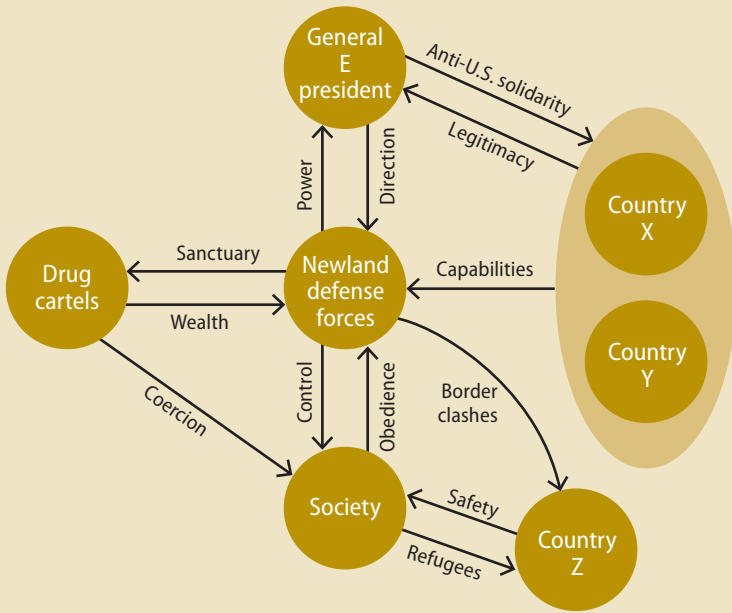
The Newland defense force controls the population and provides General E his power. The president, in turn, provides direction and power to the Newland defense force to control the society. The people are expected to comply with the directions of the president and the Newland defense forces. Those who do not comply are oppressed. In exchange for sanctuary, the drug cartels provide funding to the regime. They also harass and terrorize the section of the society that opposes the regime. Countries X and Y provide material capabilities to the Newland defense force and international legitimacy to the regime. In turn, the regime maintains an anti-U.S. policy stance. Over the past six months, more than 100,000 persons have fled Newland to country Z. Country Z is temporarily providing Newland refugees humanitarian assistance and protection. Several border clashes have erupted between Newland defense forces and country Z in the last three weeks. The antidemocratic dictatorship of Newland that oppresses its people, encourages instability in the region, and supports criminal and terrorist activities is unacceptable to U.S. interests.

SOURCE: ADRP 5-0, p. 2-9.
RAND *TL129-B1*

As ADRP 5-0 states,

> Conditions may be tangible or intangible, military or non-military. They may focus on physical or psychological factors. When describing conditions that constitute a desired end state, the commander considers their relevance to higher policy, orders, guidance, or directives. Since every operation focuses on a clearly defined, decisive, and attainable end state, success hinges on accurately describing those conditions. These conditions form the basis for decisions that ensure operations progress consistently toward a desired end state.

Box 2 offers an example end state for the scenario in Box 1.

While a minimum degree of understanding is necessary to begin framing and defining the problem, developing an operational approach, and conducting assessment, it is not a step in a linear process that is accomplished, put into a binder on a high shelf, then ignored. Understanding should be continuously improved throughout the operation and used as feedback to assess progress and adjust the plan, if required. Yet the time available will constrain the degree of understanding. Planning prior to initiating a mission must include a deadline for executing each of the VAMPG components. Otherwise, an infinite amount of time could be expended on developing understanding, leaving no opportunity to apply that understanding to plans and actions that would accomplish the desired ends. However, once the mission has started, each step must continually be repeated and revised as necessary. (The final step, Conducting an Assessment, describes this process further.)

At the conclusion of "Understanding the Operational Environment," the following should be known:

- current conditions
- desired conditions
- key actors and systems, their desired outcomes, and capabilities
- relationships between key actors
- functions of key actors and systems

Box 2
Example Desired State of Environment
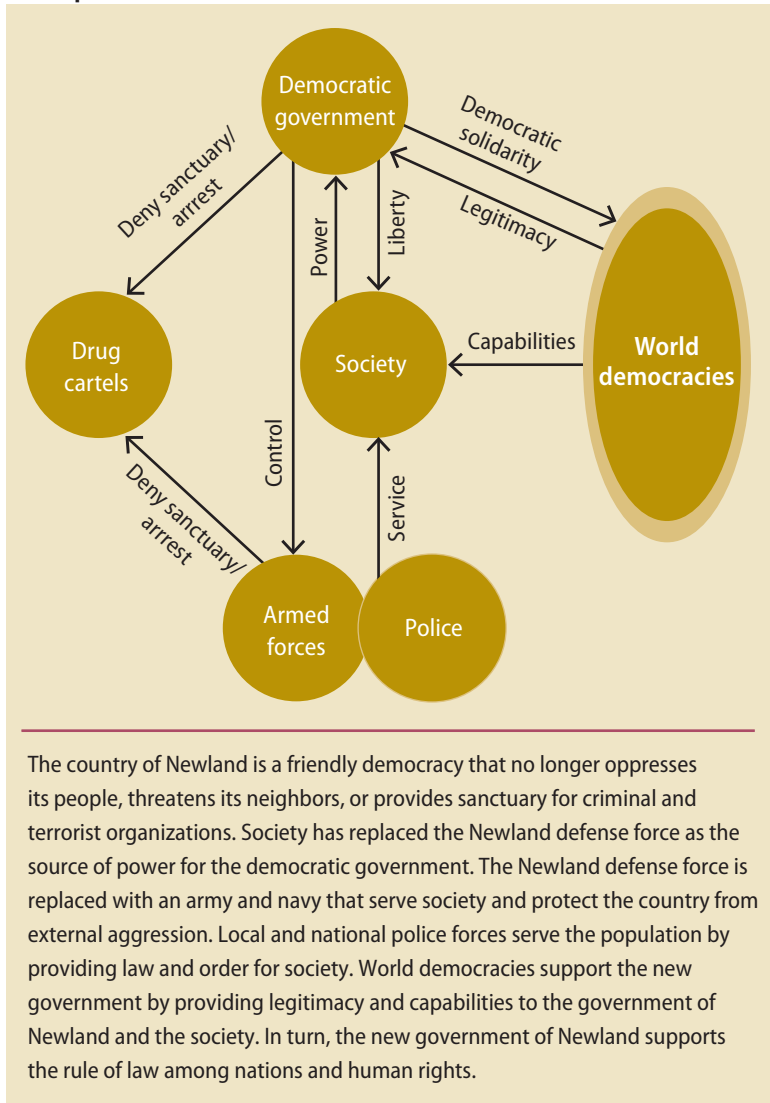
The country of Newland is a friendly democracy that no longer oppresses its people, threatens its neighbors, or provides sanctuary for criminal and terrorist organizations. Society has replaced the Newland defense force as the source of power for the democratic government. The Newland defense force is replaced with an army and navy that serve society and protect the country from external aggression. Local and national police forces serve the population by providing law and order for society. World democracies support the new government by providing legitimacy and capabilities to the government of Newland and the society. In turn, the new government of Newland supports the rule of law among nations and human rights.

SOURCE: ADRP 5-0, p. 2-9.
RAND *TL129-B2*

- critical tensions in the environment such as conflicts between key actors and systems, particularly which actors are opposing friendly efforts (e.g., enemies or adversaries) and which are supporting them.

Step 3: Frame and Define the Problem

The following questions should be answered during this step:

- What is the difference between the operational environment's current and desired end states?
- What variables, actors, and/or systems need to be acted on to transform the current conditions into the desired conditions?
- What are the adversary's ends, ways, means, and critical capabilities?
- What is the adversary's center of gravity?

Step 3.a: Identify the Problem or Problem Set, Then View It as an Adversary System

Joint and service doctrine variously describes this step as "understanding" or "framing" the problem. Regardless, the purpose is to identify "what needs to be acted on to reconcile the differences between the existing and desired conditions."[16]

According to ADRP 5-0, "A problem is an issue or obstacle that makes it difficult to achieve a desired goal or objective. … In the context of operations, an operational problem is the issue or set of issues that impede commanders from achieving their desired end state."[17] There will be characteristics in the operational environment that are obstacles; otherwise, there would be no need to conduct military operations. However, there will also be characteristics that support operations and can assist in achieving friendly objectives. Identifying both aspects of the situation is necessary to effectively carry out the

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[16] JP 5-0, , 2011, p. III-12.

[17] ADRP 5-0, 2012, p. 2-9.

mission. Thus, it may be useful to conceive of this step as defining a "puzzle" rather than a "problem."

Unless they thoroughly understand the nature of the puzzle, commanders cannot devise approaches to change the operational environment. Analyzing the situation and the mission and operational variables provides the critical information necessary to understand and frame these problems.[18] Such factors as economic development, governance, information, tribal influence, religion, history, and culture shape the current challenges organizations face in conflict environments. Globalization and demographic shifts, technological diffusion and proliferation, resource scarcity, manmade and natural disasters, and failed or failing states also collectively affect the operational environment and compound the levels of complexity.

Collecting and organizing information according to the PMESII variables described in JP 2-01.3 (see Figure 12) and JP 5-0 may be best for supporting understanding at the strategic or operational levels. At the tactical level, however, ASCOPE analysis may be more useful. These variables can be described as follows:[19]

- Areas: This characteristic addresses terrain analysis from a civilian perspective. Analyze how key civilian areas affect the missions of respective forces and other key stakeholders and how military operations affect these areas. Factors to consider include political boundaries, locations of government centers, by-type enclaves, special regions (for example, mining or agricultural), trade routes, and possible settlement sites.
- Structures: Structures include traditional high-payoff targets, protected cultural sites, and facilities with practical applications. The analysis is a comparison of how a structure's location, functions, and capabilities can support operations as compared to the costs and consequences of such use.
- Capabilities: Assess capabilities in terms of those required to save, sustain, or enhance life, in that order. Capabilities can refer to the ability of local authorities to provide key functions and services,

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[18]   FM 5-0, 2010, para. 3-8.

[19]   Quoted from Johns Hopkins University Applied Physics Laboratory, 2010, p. 2-3.

including areas needed after combat operations and contracted resources and services.

- Organizations: Consider all nonmilitary groups or institutions in the OE [operational environment]. These may be indigenous, come from a third country, or be U.S. agencies. They influence and interact with the populace, forces, and each other. Current activities, capabilities, and limitations are some of the information necessary to build situational understanding of organizations. [This] category often becomes a union of resources and specialized capabilities.
- People: *People* is a general term describing all nonmilitary personnel that military forces encounter in the OE, including persons outside the OE whose actions, opinions, or political influence can affect the mission. Identify the key communicators and the formal and informal processes used to influence people. In addition, consider how historical, cultural, and social factors shape public perceptions, beliefs, goals, and expectations.
- Events: Events are routine, cyclical, planned, or spontaneous activities that significantly affect organizations, people, and military operations. Examples include seasons, festivals, holidays, funerals, political rallies, agricultural crop [and] livestock and market cycles, and paydays. Stressful events, such as natural disasters and military combat operations, can dramatically affect the attitudes and activities of the populace and include a moral responsibility to protect displaced civilians. Template relevant events and analyze them for their political, economic, psychological, environmental, and legal implications.

Table 7 provides some examples.

ASCOPE variables can be cross-tabulated with the PMESII (Figure 15). Ideally, this matrix will help planners to identify the ways and means available to various stakeholders in the operational environment.

Viewing the operational environment as an adversary system highlights the conflictual nature of the mission. Identifying the outcomes preferred by the various actors helps to indicate which are working in opposition, which are supportive, and which are neutral but may be influential to achieving the end state one's own organization desires. JP 5-0 illustrates the inputs and outputs of this step (see Figure 16).

Table 7
Example ASCOPE Variables

Area	Structure	Capabilities	Organizations	People	Events
Tribe	Cemeteries	Wastewater, sewer	Tribal	Cellphones	Weddings
Families, clans	Religious shrines	Potable water	Families, clans	Political speeches	Birthdays
Ethnic enclaves	Houses of worship	Electrical	Religious organizations	Meetings	Religious gatherings
Religious enclaves	Bars and tea shops	Trash collection and disposal	Ethnic organizations	Media, TV, radio	Funerals
Economic districts	Social gathering places	Medical services	Unions	Newspapers, magazines	Major religious events
Smuggling routes	Print shops	Police public safety	Community organizations	Visual, graffiti/signs	Anniversaries
National boundaries	Internet cafes	Markets and consumer goods	Militia units	Rallies/ demonstrations	Holidays
Social classes	Television	Employment and commerce	Illicit organizations	Restaurants	Harvests
Political districts	Radio stations	Crime and justice	Gangs	Door to door	Town or provincial government meetings
Military districts	Hospitals	Basic needs	Insurgent groups	Internet	Elections
School districts	Banks	Public health	Business organizations	Markets	Sporting events
Road system	Dams	Jobs and employment	Police organizations	Sports	

Table 7—Continued

Water sources	Bridges	Religion	Nomads	Religious gatherings	
Water coverage	Police stations	Refugees and displaced persons	Refugees and displaced persons	Parks, town squares	
Water districts	Gas stations	Political voice	Government agencies	Family gatherings	
Construction sites	Military/police barracks	Civil rights and individual rights	Volunteer groups	Lines for purchasing gasoline	
Gang territory	Courthouses, jails		Intergovernmental organizations	Bars, tea shops	
Safe areas, sanctuaries	Oil and gas pipelines		Political organizations	Food lines	
Trade routes	Water pumping stations		Contractors	Job lines	

SOURCE: Johns Hopkins University Applied Physics Laboratory, 2010, p. 2-5.

Figure 15
Relating PMESII and ASCOPE Variables

	P Political	**M** Military/security	**E** Economic	**S** Social	**I** Infrastructure	**I** Information
A Areas	District or provincial boundary	Improvised explosive device sites, military or insurgent bases	Bazaars, farms, repair shops	Picnic areas, bazaars, meeting sites	Irrigation networks, medical services	Radio, gathering points, graffiti, posters
S Structures	Shura halls, courthouse	Police headquarters, military bases	Bazaars, banks, industrial plants	Mosques, wedding halls	Roads, bridges, electrical lines, dams	Cell, radio, TV towers; print shops
C Capabilities	Dispute resolution, judges, local leadership	Military and police enemy recruiting potential?	Access to banks, development, black market	Traditional structures, means of justice	Ability to build and maintain roads, dams, irrigation	Literacy rate, phone service
O Organizations	Governmental and nongovernmental organizations	Coalition and host nation forces	Banks, landholders, economic nongovernmental organizations	Tribes, clans, families	Governmental ministries, construction companies	News organizations, mosques
P People	Governors, councils, elders, judges	Coalition and host nation military and police leaders	Bankers, landholders, merchants, criminals	Religious, civic leaders, elders, families	Builders, contractors, development councils	Civic and religious leaders, family heads
E Events	Elections, meetings, speeches, trials	Kinetic events, military and police operations	Drought, harvest, business opening	Weddings, deaths, births, funerals, bazaar days	Road, bridge, and school construction; well digging	Festivals, project openings

SOURCE: Johns Hopkins University Applied Physics Laboratory, 2010, p. 2-6.

Step 3

Figure 16
Defining the Problem

Key inputs		Key outputs
Description of the current operational environment • Systems perspective of the operational environment • Impacts of physical and information factors on operational environment • ~~Friendly/enemy COGs~~ Description of the desired operational environment • Military end state • Termination criteria Description of the opposing end states	Defining the problem →	Problem statement that identifies problem to be solved Tension between current conditions and desired end state Elements within the operational environment that must change to achieve desired end state Adversary COG(s) Opportunities and threats to achieving end states Limitations

SOURCE: JP 5-0, p. III-12.
NOTES: All inputs/outputs are reviewed throughout the planning process and updated as changes occur in the operational environment, the problem, or the strategic guidance.
RAND *TL129-16*

In many cases, particularly missions that are dominated by combined arms maneuver, the problem can be deduced from the operations order from the higher headquarters. When the organization planning a mission has a great deal of latitude or for complex operations in which commanders and staffs must infer the parameters of their mission from the operational environment, the following questions can be useful for framing the problem: [20]

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[20] According to U.S. Army TRADOC Pamphlet 525-5-500, 2008, p. 23:

Context: the set of circumstances or facts that surround a particular event, situation, etc. Context as described by Mao Tse Tung: "Thus the different laws for directing different wars are determined by the different circumstances of those wars—differences in their time, place, and nature. As regards the time factor, both war and its laws develop; each historical stage has its special characteristics, and hence the laws of war in each historical stage have their special characteristics and cannot be mechanically applied in another stage. As for the nature of war, since revolutionary war and counterrevolutionary war both

- What is the history of the problem? What is its genesis?
- What parties are interested in the problem, and what are the implications of likely outcomes?
- What caused the problem to come to the fore?
- Who are the key stakeholders, their preferred outcomes, their importance for achieving the desired end state, and their capabilities?
- How important is the issue in terms of key stakeholder willingness to devote resources toward a solution?
- Why is this problem now becoming salient? Why wasn't it addressed earlier, or why can't dealing with it be postponed?
- What systems are shaping the current environment, and how do they relate to transformation to the desired environment?

Box 3 presents an example of a problem statement.

At the conclusion of this substep, leaders and planners should have created a succinct statement of the problem or problem set to solve. That statement should

- clearly define the problem or problem set to be solved
- consider how tension and competition affect the operational environment to help identify how to transform the current conditions to the desired end state before the adversary is able to do so
- broadly describe the requirements for transformation, anticipating changes in the operational environment while identifying critical missions.[21]

have their special characteristics, the laws governing them also have their own characteristics, and those applying to one cannot be mechanically transferred to the other. As for the factor of place, since each country or nation, especially a large country or nation, has its own characteristics, the laws of war for each country or nation also have their own characteristics, and here, too, those applying to one cannot be mechanically transferred to the other. In studying the laws for directing wars that occur at different historical stages, that differ in nature and that are waged in different places and by different nations, we must fix our attention on the characteristics and development of each, and must oppose a mechanical approach to the problem of war."

[21] JP 5-0, 2011, p. III-13.

Box 3
Example Narrative Statement of the Problem

The Newland defense force is the primary impediment to a democratic government in Newland and the primary factor of instability in the region. For over 40 years, the Newland defense force has maintained power for itself and the regime by oppressing all opposition within society. In addition, the Newland defense force has a history of intimidating country Z through force (both overtly and covertly). Corruption in the Newland defense force is rampant within the leadership, and the defense force has close ties to several drug cartels. General E is the latest of two dictators emerging from the Newland defense force. Even if General E is removed from power, the potential for a new dictator to emerge from the Newland defense force is high. There is no indication that the leadership of the Newland defense force is willing to relinquish power within Newland.

SOURCE: ADRP 5-0, p. 2-9.
RAND *TL129-B3*

Step 3.b: Determine the Adversary COG

A corollary approach is to imagine destroying a single element of the adversary's resources and to estimate how this would affect the friendly ability to produce the desired end state. ADRP 3-05 advises planners to

> [v]isualize the threat as a system of functional components. … To test the validity of centers of gravity, ask the following question: Will the destruction, neutralization, influence, or substantial weakening of the center of gravity result in changing the threat's course of action or in denying its objectives?[22]

Commanders and planners may determine that neutralizing or disrupting an adversary COG is sufficient to achieve their own goals or in some situations no greater effect can be achieved with the resources—including time—that are available. Destruction of the COG is, however, usually necessary to achieve the long-term goals of an engagement, battle, operation, campaign, or a war.

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[22] ADRP 3-05, 2012, p. 4-5.

In some cases, there may be more than one COG at each level, but typically there is only one—especially at the strategic level—during any particular phase of a battle or campaign. However, the COG may be different during different phases—as was shown in Chapter 2 with the example that illustrated an insurgency. If multiple COGs are identified at the same level during the same phase, it usually means that critical capabilities have been mistaken for COGs and that further analysis will narrow the candidates down to a single, correctly identified COG. Additionally, the identification of critical capabilities and critical requirements may lead to reconsidering the candidate for COG that was initially identified.

Step 3.c: Identify the Adversary COG's Critical Requirements, Then Critical Vulnerabilities

From the remaining means, select those that are critical for execution of the critical capability. These are the critical requirements. (In a system-of-systems analysis, these will be links between actors or nodes.[23]) These are what the COG requires to perform its critical capability. For example, if the COG is an armored corps and its critical capabilities are to attack, seize, occupy, and defend, its critical requirements could be command and control, logistics, fires, and maneuver.

Complete the process by identifying the critical requirements that are vulnerable to adversary action. Analyze the critical requirements from the previous paragraph to determine which are susceptible to attack that would achieve decisive results. For example, if the armored corps has extended lines of communication and friendly forces have air superiority, the supply lines necessary to feed, fuel, and arm the corps could be a critical vulnerability.

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[23]   See JP 5-0, pp. III-10, III-11, and III-22; and JP 2-01.3, pp. I-3, I-4, and II-44 through II-54.

At the conclusion of "Frame and Define the Problem," the following should be known:

- the problem(s) that must be solved to achieve the desired end state
- the adversary's COG, critical capabilities, critical requirements, and critical vulnerabilities.

Step 4: Develop the Operational Approach

> The following questions should be answered during this step:
> - What is the main source of our own organization's ability to achieve its goals, and what are its vulnerabilities?
> - What friendly, neutral, and other organizations' capabilities can help us achieve our own goals, and what are their vulnerabilities?
> - What events could occur and/or what objectives can be achieved that would:
>   - help transform the operational environment from its current conditions to the desired conditions
>   - inhibit the desired transformation?
> - How can the resources of our organization, and those of actors who are willing to collaborate with us, be applied to
>   - realize the events and/or objectives that are helpful for our goals
>   - preclude events and/or objectives that would be harmful for our goals?

Development of an operational approach facilitates commanders' and staffs' planning. Planning is a continuous process in which the conceptualization of how to solve a problem overlaps with translating concepts into directions or orders. According to ADRP 5-0,

> Planning is the art and science of understanding a situation, envisioning a desired future, and laying out effective ways of bringing that future about. Planning helps commanders create and communicate a common vision among commanders, their staffs, subordinate commanders, and unified action partners. Planning results in a plan and orders that synchronize the

action of forces in time, space, and purpose to achieve objectives and accomplish missions. Planning is both a continuous and a cyclical activity.[24]

Planning helps leaders and staffs

- understand and develop solutions to problems
- anticipate events and adapt to changing circumstances.

The various actions involved in creating a plan fall within a spectrum consisting of conceptual planning on one end and detailed planning on the other. After developing an understanding of the operational environment and defining the problem, leaders and staffs conceptualize ways to solve the problem. As stated in MCWP 5-1, conceptual planning facilitates the ability of commanders and staffs to gain an "understanding of the environment and the problem as well as develop a broad approach to solve the problem."[25] Detailed planning describes the specific actions to be taken and assigns responsibility for their performance. Figure 17 depicts these relationships.

Step 4 of the VAMPG results in a description of the broad general actions that must be taken to change the current conditions of the operational environment into the desired conditions, thus solving the problem. Known as an operational approach, this product is one of the outcomes of the design processes that entail understanding the environment, understanding the desired end state, and defining the problem. As shown in Figure 18, the operational approach "reflects understanding of the operational environment and the problem while describing the commander's visualization of a broad approach for achieving the desired end state."[26] This approach will subsequently be developed into guidance, direction, plans, or orders.

ADRP 5-0 states that "the operational approach serves as the main idea that informs detailed planning and guides the force through

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[24] ADRP 5-0, 2012, p. 2-1.

[25] MCWP 5-1, 2010, p. 1-3.

[26] JP 5-0, 2011, p. III-13.

Figure 17
Spectrum of Conceptual and Detailed Planning

Conceptual planning	Detailed planning
What to do and why	How to do it
Conceptual planning establishes objectives and a broad approach for achieving them.	Detailed planning works out the particulars of execution based on objectives already provided.
(commander's intent and operational approach)	(includes movement tables, target lists, and control measures)

Concepts drive details →

← Details influence concepts
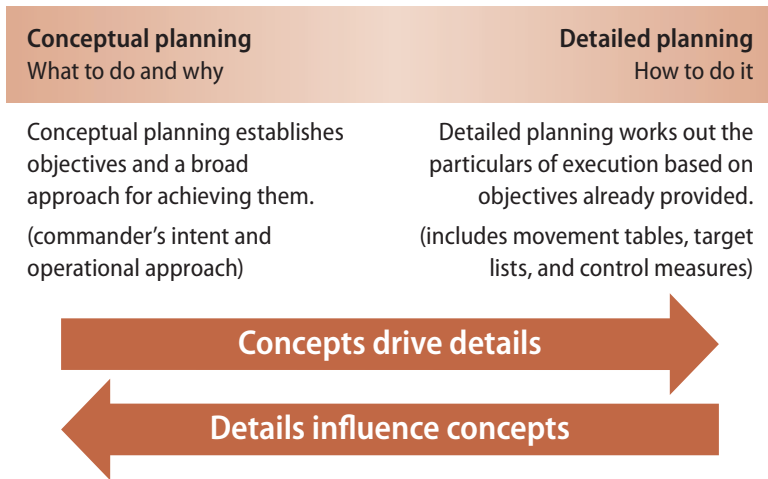
SOURCE: ADRP 5-0, p. 2-3.

preparation and execution."[27] Operational approaches should be used to develop courses of action when using the procedures of the JOPP, MDMP, or MCPP as the method used to turn conceptual planning into detailed plans or orders. Figure 19 illustrates the inputs and outputs when developing an operational approach using the JOPP, modified to include the friendly and adversary COG identification presented in the VAMPG.

As the operational environment evolves during execution, reframing the problem and changing the operational approach may be necessary because the desired end state or desired conditions have changed or are no longer possible. Planners and commanders should expect changes in conditions during operations. Making good use of organizational learning helps them anticipate these changes and adjust the plan accordingly. (The assessment performed in Step 5 helps identify when changes are needed.) Furthermore, as noted previously, COGs may shift during the phases of a battle or campaign.

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[27]   ADRP 5-0, 2012, p. 2-10.

Step 4

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Figure 18
Developing the Operational Approach

Identify problem
What prevents us from going where we want to go?

Where we are

Operational design

Where do we want to go?

- Achieving a common understanding of the situation
- Continuous and recursive refinement of situational understanding

Elements of operational design

- Strategic end state
- Military end state
- Supporting departments' and agencies' objectives

Operational approach

SOURCE: JP 5-0, p. III-3.
RAND *TL129-18*

Step 4.a: Identify Own COG and Those of Other Key Stakeholders (Friends and Allies, Neutrals, Others), Critical Requirements, and Critical Vulnerabilities (i.e., repeat 3.b and 3.c)

When applying COG analysis to the friendly force, the COG will usually be the unit or headquarters of the unit whose commander and staff are conducting the analysis. Rather than identifying the COG, the most useful product of this substep will usually be identifying the critical vulnerabilities so they can be made priorities for protection. Nonetheless, it is important to complete the full analysis because there will sometimes be surprises, and a unit may discover that an ally, neutral, or other actor is actually more important to achieving the unit's mission than the unit itself. (This may be common in Secu-

Figure 19
Developing the Operational Approach: Inputs and Outputs

Key inputs	Key outputs
Problem statement that identifies problem to be solved	Description of the operational environment
Tension between current conditions and desired end state	Definition of the problem
Elements within the operational environment that must change to achieve desired end state	Commander's operational approach
Adversary COG(s)	Friendly, etc. COG(s)
Opportunities and threats to achieving end states	JFC's initial planning guidance
Limitations	• Commander's initial intent

Developing the operational approach →

SOURCE: JP 5-0, p. III-14.
NOTES: All inputs and outputs are reviewed throughout the planning process and updated as changes occur in the operational environment, the problem, or the strategic guidance.
RAND *TL129-19*

rity Force Assistance missions.) The identification process proceeds as follows:

1. Identify each organization's desired ends. What are the desired ends or objectives of our own organization and those of friends and allies, neutral, and other key stakeholders?
2. Identify possible "ways" or actions that can achieve the desired ends. What courses of action might each of these organizations take to achieve their goals?
3. Select the way(s) that analysis suggests the organizations are most likely to use. Identify the most elemental or essential actions—these are the critical capabilities.
4. List each organization's means, the resources available or needed to execute the critical capability. (When using a system-of-systems analysis, these will be actors or nodes.)

5. For each organization, select the entity (tangible agent) from the list of means that inherently possesses the critical capability. This is the COG for that organization, the doer of the action that achieves the ends. (In a system-of-systems analysis, it will be the key actor or node.)

Step 4.b: Assess and Prioritize Vulnerabilities for Attack or Protection

Identify key assets that are required to accomplish adversary and friendly missions. Using a decision support tool, such as MSHARPP or CARVER, set priorities for protecting the key assets of your own unit, other friendly forces, and stakeholders who may contribute to the success of your mission. Using the same or similar decision support tools, prioritize adversary critical factors for attack. This analysis will help identify decisive points for the next step.

Step 4.c: Determine Initial Decisive Points

Most of the adversary's critical factors identified using the VAMPG will be decisive points. JP 5-0 states that **"Although decisive points are usually not COGs, they are the keys to attacking or defending them."**[28] According to ADRP 5-0, "A decisive point is a geographic place, specific key event, critical factor, or function that, when acted on, allows commanders to gain a marked advantage over an adversary or contribute materially to achieving success."[29] Actions to protect or enable nonadversary COGs, such as building the national security forces of a partner nation, can also be decisive points. In such cases, the transition of security responsibility to the partner nation is also likely to be a decisive point. When a decisive point is identified for action, it may become an objective or lead to an objective.

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[28] JP 5-0, 2011, p. III-26.

[29] ADRP 5-0, 2012, p. 2-20.

Decisive points might include the following:

- port facilities
- towns controlling key road networks
- distribution networks and nodes
- adversary or friendly bases of operations
- specific events, such as transfer of security responsibility
- specific elements of an enemy force.

During COIN and stability operations, decisive points may be less tangible than those during major combat operations. For example, decisive points for COIN and stability operations might include the following:

- participation in elections
- restoring essential services, such as electric power, water, and sanitation
- reestablishing police and emergency services
- increasing employment within an area or among a particular group.

Of course, during complex operations—especially over several different phases—there may be a combination of specific, tangible decisive points and less-tangible ones. Furthermore, there may frequently be situations in which the number of potential decisive points exceeds the number that friendly elements can act on. Use the VAMPG to help identify the decision points that best lead to mission accomplishment—often these will be the adversary's critical vulnerabilities—and act on them in a sequence that most quickly and efficiently leads to mission success.

Step 4.d: Determine Lines of Operation and Effort

There are multiple ways of depicting an operational approach. One technique is to use LOOs and/or LOEs to illustrate the key objectives or tasks and how they link to each other and the desired end state.

LOOs are physical routes or points linked to geographic positions and/or a series of actions or events that must unfold in a particular

sequence. They relate friendly forces to adversary forces, are oriented on terrain or an adversary military force, and link the friendly force between its base of operations and an objective or series of objectives. They will usually be an array of decisive points. Figure 20 is an example.

LOEs are conceptual descriptions or diagrams that link together tasks to demonstrate how they will lead to achieving an objective, condition, or end state. They are used when reference to the relative position of an enemy force or terrain is not a useful way to describe a plan or operational approach. They are particularly useful during COIN and stability operations or other complex operations when planning for tasks that are typically performed by civilian resources and can link together less-tangible decisive points, such as elections.

Figure 21 depicts an example of multiple LOEs that lead to establishing the conditions required to accomplish a mission or that collectively define a desired end state. However—unlike the physical path of an LOO, which must be marched in order—the tasks within an LOE do not, in many cases, have to be accomplished within a particular sequence. Rather than a specific sequence of actions or events, it may often be more accurate to apply the mathematical concept of a set when thinking about the decisive points or activities within an LOE.

Figure 20
Line of Operation
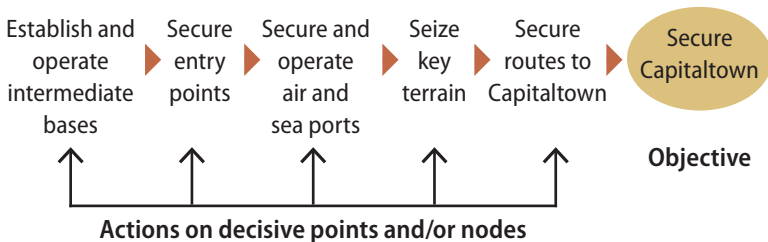
SOURCE: JP 5-0, p. III-27.
RAND *TL129-20*

Figure 21
Sample Lines of Effort

Conditions

Civil control

- Establish police forces training
- Integrate trained police into operations
- Counter organized crime
- Establish judicial system
- Transition to host nation police forces

Rule of law established

Civil security

- Initiate security forces training
- Establish national security forces
- Integrate security forces into operations
- Isolate population from insurgency
- Defeat insurgency
- Transition to national security forces

Safe/secure environment established

Essential services

- Sewage treatment plants operating
- Establish trash disposal
- Water treatment plants operating
- Restore electrical power
- Reopen hospitals and clinics
- Identify and recruit local leaders

Essential services restored

Economic/infrastructure development

- Implement employment programs
- Secure vital natural resources
- Repair/ rebuild distribution infrastructure
- Prioritize reconstruction projects
- Essential banking services available
- Implement public works projects

Foundation for development established

Governance

- Identify and recruit local leaders
- Facilitate establishment of sector representation
- Facilitate establishment of neighborhood councils
- Facilitate establishment of district councils
- Support and secure elections

Regional and local governance established

SOURCE: JP 5-0, p. III-29.

RAND *TL129-21*

LOOs and LOEs can be combined. This will often happen during complex operations, when it may be useful to designate security and other tasks potentially requiring military coercion, such as the clear and hold phases of a COIN operation using LOOs, while the governance and development tasks, usually designated for civilian action, are depicted as LOEs.[30]

Step 4.e: Decide on and Document the Operational Approach

There are two types of approach: direct and indirect (Figure 22). A direct approach would attack the adversary by applying combat power or other resources directly against its COG. However, the COG itself will often be well-protected and thus rarely vulnerable to a direct approach. The VAMPG facilitates using an indirect approach, attacking or applying resources indirectly against a COG's critical vulnerabilities.

Regardless of whether the operational approach is direct or indirect, there are multiple ways of documenting it. One technique is to use LOOs and/or LOEs to illustrate the key objectives or tasks and how they link to each other and the desired end state. This can be accomplished with a simple sketch. In the example shown in Figure 23, the combat tasks of defeating enemy forces (Newland) would be an LOO, while establishing civil security and supporting the local and national governments would be LOEs.

Alternatively, an operational approach can be depicted using a more-complex diagram indicating LOOs/LOEs, supported objectives, and their links to the desired conditions (Figure 24).

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[30] See FM 3-24/MCWP 3-33.5, *Counterinsurgency*, Washington, D.C.: Headquarters Department of the Army and Headquarters Marine Corps Combat Development Command, December 2006, pp. 5-18 through 5-20.

Figure 22
Direct Versus Indirect Approach
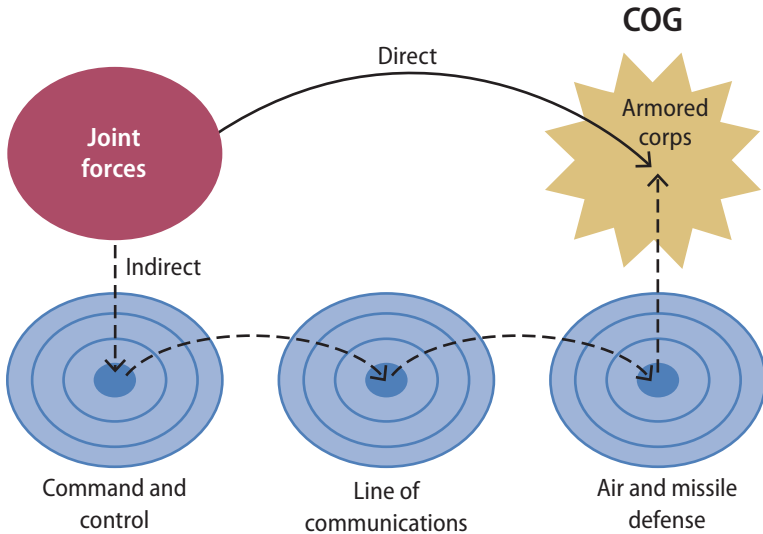
SOURCE: JP 5-0, p. III-32.
RAND *TL129-22*

Figure 23
Example Operational Approach Sketch
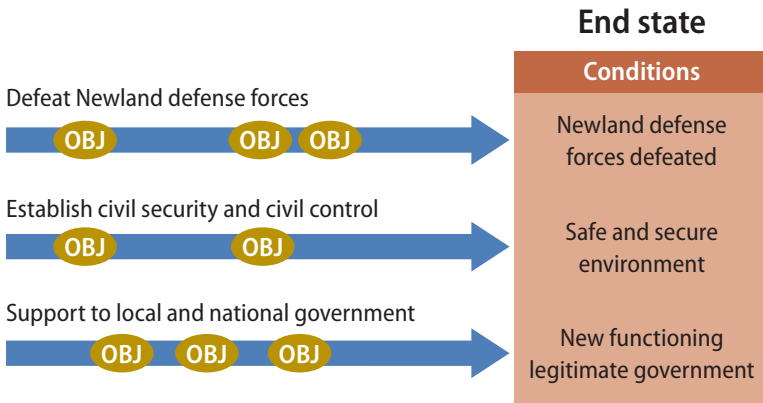
Source: ADRP 5-0, p. 2-10.
RAND *TL129-23*

Figure 24

Example Operational Approach

	Lines of operation/ lines of effort	Defeat mechanism/ stability mechanism	Supported objectives	Desired conditions
	Information operations	Influence	1 2 3 4 5 6 7 8	A
	Develop civil administration	Support	1 3 4 5 6 7 8	B
	Security operations	Isolate divide	1 2 3 6 7 8	C
	Education	Support influence	1 3 4 5 6 8	D
	Infrastructure development	Support	1 3 5 6 7 8	E
	Economic development	Support	1 3 4 5 7 8	F

Current conditions

End state
Safe and stable region

Supported objectives
1 Positively influence people
2 Trained and professional security force
3 Civil security operations
4 Literacy rate improved
5 Population has access to essential services
6 Qualified and trained civil service
7 Diminish illegal networks
8 Revenues increased

Desired conditions
A Populace regularly, readily interacts with provincial government
B Civil servants maintaining regular work hours and actively pursuing their responsibilities
C Available and trained security forces employed effectively by the provincial government
D School attendance increased
E Improved conditions for basic services
F Increased investment/projects in the provinces

SOURCE: JP 5-0, p. II-15.

RAND TL129-24

For the Army, the method prescribed by doctrine to produce a plan or order is the MDMP.[31] (The JOPP and the Marine Corps Planning Process are similar but not identical to the steps in the MDMP.[32]) Appendix A provides an overview of the MDMP and a list of the key inputs and outputs for each of its steps.

Depending on the situation and the organization conducting the planning, multiple operational approaches may be developed and evaluated as competing options or courses of action, with one selected as the basis of detailed planning, then implemented. In a time-constrained environment, particularly at brigade level and below, the commander may direct the development of a single operational approach that will be developed into an operation plan or order.

If multiple approaches or courses of action are considered, they should be evaluated against each other using set criteria to determine which is most likely to achieve the goal at the lowest cost. As noted previously, when time is limited a commander might direct consideration of only a single approach or course of action. Regardless of whether one or more of these are considered, each should be war-gamed to improve understanding of advantages and disadvantages, challenges and opportunities, and risks. It also helps to refine friendly force actions and anticipate potential responses by adversaries and other key actors. Chapter 4 of ATTP 5-0.1 provides a detailed method of war-gaming.

Step 4.f: Issue Guidance and Direction

For Army units, guidance and direction will almost always be in the format of a plan or order using the five-paragraph format (situation, mission, execution, sustainment, and command and signal). A plan is something that may eventually be executed but not until it becomes

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[31]   See ADRP 5-0, 2012, pp. 2-11 through 2-24, and ATTP 5-0.1, *Commander and Staff Officer Guide*, September 2011, Chapter 4.

[32]   See JP 5-0, 2011, Chapter 4, and MCWP 5-1.

an order. Orders convey instructions, which may include direction to execute a plan, from a superior to a subordinate. ATTP 5-0.1 lists the following as characteristic of good plans:[33]

- simple
- clear, concise, complete
- provide an easily understood concept of operations
- simplify complicated situations
- flexible, to enable units adapt to quickly changing circumstances.

During complex operations or when countering hybrid threats, mission orders will usually be preferable. According to ATTP 5-0.1, mission orders

> are directives that emphasize to subordinates the results to be attained, not how they are to achieve them. [They] focus on what to do and the purpose of doing it without prescribing exactly how. … Mission orders contribute to flexibility by allowing subordinates the freedom to seize opportunities or react effectively to unforeseen enemy actions and capabilities.[34]

They should be simple and brief, using the five-paragraph format. Mission orders should do the following:
- State the unit's mission.
- State the commander's intent.
- Provide a description of present conditions or those expected at the start.
- Designate the objectives to be achieved and the desired end state or conditions.
- Simply describe the operational approach expected to accomplish the mission.
- Provide all the "5 Ws"—who, what, when, where, and why—when assigning tasks to subordinate units.

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[33] Extracted from ATTP 5-0.1, 2001, p. 12-1.

[34] ATTP 5-0.1, p. 12-2.

At the conclusion of "Develop the Operational Approach," the following should have been accomplished:

- identification of own, friendly, neutral, and other COGs
- selection of an approach or course of action for implementation
- development of a plan or order to execute the chosen approach or course of action that
  - specifies what is be done
  - specifies what results are expected.

Step 5: Assess Performance and Effectiveness

The following questions should be answered during this step:
- Are we doing what we said we would do?
- Are our actions producing the desired effects?

One U.S. Army truism states that "no plan survives first contact with the enemy." Particularly when facing "wicked" or ill-structured problems, such as insurgencies, hybrid threats, and other complex operations, it is extremely unlikely that the initial plan will work as desired without adjustments. As stated in TRADOC Pamphlet 525-5-500, "Adaptive iteration is required both to refine problem structure and to find the best solution."[35] Plans are critical to have something to adjust from when unexpected situations occur, but they will almost inevitably require changes. To effectively determine the changes that need to be made, leaders and planners must routinely assess performance.

JP 5-0 states that "Assessment is the continuous monitoring and evaluation of the current situation and progress of a joint operation towards mission accomplishment." [36] The following paragraphs are extracted from ADRP 5-0.[37]

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[35]   See U.S. Army TRADOC Pamphlet 525-5-500, 2008, pp. 8–11.

[36]   JP 5-0, 2011, p. III-44.

[37]   ADRP 5-0, 2012, pp. 5-1 though 5-5, with minimal editing for format

On assessment:

> Assessment precedes and guides the other activities of the operations process. Assessment involves deliberately comparing forecasted outcomes with actual events to determine the overall effectiveness of force employment. More specifically, assessment helps the commander determine progress toward attaining the desired end state, achieving objectives, and performing tasks. It also involves continuously monitoring and evaluating the operational environment to determine what changes might affect the conduct of operations.

> Throughout the operations process, commanders integrate their own assessments with those of the staff, subordinate commanders, and other unified action partners. Primary tools for assessing progress of the operation include the operation order, the common operational picture, personal observations, running estimates, and the assessment plan. The latter includes measures of effectiveness, measures of performance, and reframing criteria. The commander's visualization forms the basis for the commander's personal assessment of progress. Running estimates provide information, conclusions, and recommendations from the perspective of each staff section.

> Assessment is continuous; it precedes and guides every operations process activity and concludes each operation or phase of an operation. Broadly, assessment consists of, but is not limited to, the following activities:

> Monitoring the current situation to collect relevant information.

> Evaluating progress toward attaining end state conditions, achieving objectives, and performing tasks.

> Recommending or directing action for improvement.

On monitoring:

> Monitoring is continuous observation of those conditions relevant to the current operation. Monitoring within the assessment process enables staffs to collect relevant information, specifically that information about the current situation that can be compared to the forecasted situation described in the commander's intent and concept of operations. Progress

cannot be judged, nor effective decisions made, without an accurate understanding of the current situation.

During planning, commanders monitor the situation to develop facts and assumptions that underlie the plan. During preparation and execution, commanders and staffs monitor the situation to determine if the facts are still relevant, if their assumptions remain valid, and if new conditions emerged that affect the operations.

On evaluation:

The staff analyzes relevant information collected through monitoring to evaluate the operation's progress. Evaluating is using criteria to judge progress toward desired conditions and determining why the current degree of progress exists. Evaluation lies at the heart of the assessment process where most of the analysis occurs. Evaluation helps commanders determine what is working and what is not working, and it helps them gain insights into how better to accomplish the mission.

Criteria in the forms of [MOEs] and [MOPs] aid in determining progress toward attaining end state conditions, achieving objectives, and performing tasks. MOEs help determine if a task is achieving its intended results. MOPs help determine if a task is completed properly. MOEs and MOPs are simply criteria—they do not represent the assessment itself. MOEs and MOPs require relevant information in the form of indicators for evaluation.

A MOE is a criterion used to assess changes in system behavior, capability, or operational environment that is tied to measuring the attainment of an end state, achievement of an objective, or creation of an effect (JP 3-0). MOEs help measure changes in conditions, both positive and negative. MOEs help to answer the question "Are we doing the right things?" MOEs are commonly found and tracked in formal assessment plans. Examples of MOEs for the objective to "Provide a safe and secure environment" may include those listed below:

• Decrease in insurgent activity.
• Increase in population trust of host-nation security forces.

A MOP is a criterion used to assess friendly actions that is tied to measuring task accomplishment (JP 3-0). MOPs help answer questions such as "Was the action taken?" or "Were the tasks completed to standard?" A MOP confirms or denies that a task has been properly performed. MOPs are commonly found and tracked at all levels in execution matrixes and are also commonly used to evaluate training. MOPs help to answer the question "Are we doing things right?"

Table 8 shows the relationships between MOEs, MOPs, and indicators.

On recommending or directing action:

Monitoring and evaluating are critical activities; however, assessment is incomplete without recommending or directing action. Assessment may diagnose problems, but unless it results in recommended adjustments, its usefulness to the commander is limited.

Table 8
Assessment Measures and Indicators

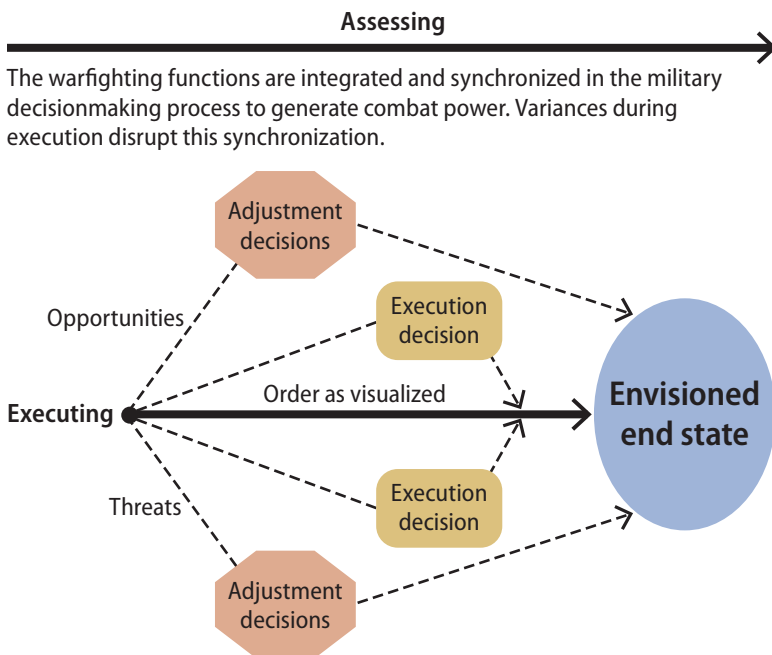| MOE	MOP	Indicator
Answers the question: Are we doing the right things?	Answers the question: Are we doing things right?	Answers the question: What is the status of this MOE or MOP?
Measures purpose accomplishment.	Measures task completion.	Measures raw data inputs to inform MOEs and MOPs.
Measures why in the mission statement.	Measures what in the mission statement.	Information used to make measuring what or why possible.
No hierarchical relationship to MOPs.	No hierarchical relationship to MOEs.	Subordinate to MOEs and MOPs.
Often formally tracked in formal assessment plans.	Often formally tracked in execution matrixes.	Often formally tracked in formal assessment plans.
Typically challenging to choose the correct ones.	Typically simple to choose the correct ones.	Typically as challenging to select correctly as the supported MOE or MOP.

SOURCE: ADRP 5-0, p. 5-3.

Based on the evaluation of progress, the staff brainstorms possible improvements to the plan and makes preliminary judgments about the relative merit of those changes. Staff members identify those changes possessing sufficient merit and provide them as recommendations to the commander or make adjustments within their delegated authority. Recommendations to the commander range from continuing the operation as planned, to executing a branch, or to making unanticipated adjustments. Making adjustments includes assigning new tasks to subordinates, reprioritizing support, adjusting information collection assets, and significantly modifying the course of action. Commanders integrate recommendations from the staff, subordinate commanders, and other partners with their personal assessment. Using those recommendations, they decide if and how to modify the operation to better accomplish the mission.

Assessment diagnoses threats, suggests improvements to effectiveness, and reveals opportunities. The staff presents the results and conclusions of its assessments and recommendations to the commander as an operation develops. Just as the staff devotes time to analysis and evaluation, so too must it make timely, complete, and actionable recommendations. The chief of staff or executive officer ensures the staff completes its analyses and recommendations in time to affect the operation and for information to reach the commander when needed.

When developing recommendations, the staff draws from many sources and considers its recommendations within the larger context of the operations. While several ways to improve a particular aspect of the operation might exist, some recommendations could affect other aspects of the operation. As with all recommendations, the staff should address any future implications.

Figure 25 illustrates the integration of the execution and assessment processes.

**Figure 25
Assessment and Decisions**

Assessing

The warfighting functions are integrated and synchronized in the military decisionmaking process to generate combat power. Variances during execution disrupt this synchronization.

During execution, commanders and staff also assess the underlying framework of the plan itself. This involves reexamining the original design concept and determining if it is still relevant to the situation.

SOURCE: ADRP 5-0, p. 4-5.

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At the end of the "Assess performance and effectiveness" step, you should have:

- assessed actions being performed for compliance with the order
- determined whether there is a variation between what was directed and what is being done
- assessed whether the desired effects are being produced
- understand the variance between desired actions or outcomes and actual actions or outcomes
- if necessary, recommended changes to the original order or guidance to bring outcomes back onto the desired track.

Appendix

A. The Military Decision Making Process[1]

The military decisionmaking process is an iterative planning methodology to understand the situation and mission, develop a course of action, and produce an operation plan or order (ADP 5-0). The MDMP integrates the activities of the commander, staff, subordinate headquarters, and unified action partners to understand the situation and mission; develop and compare courses of action; decide on a course of action that best accomplishes the mission; and produce an operation plan or order for execution. The MDMP helps leaders apply thoroughness, clarity, sound judgment, logic, and professional knowledge to understand situations, develop options to solve problems, and reach decisions. This process helps commanders, staffs, and others think critically and creatively while planning. The MDMP improves understanding of the situation and a plan or order that guides the force through preparation and execution.

The MDMP consists of seven steps as shown in Figure 26. Each step of the MDMP has various inputs, a method (step) to conduct, and outputs. The outputs lead to an increased understanding of the situation and facilitate the next step of the MDMP. Commanders and staffs generally perform these steps sequentially; however, they may revisit several steps in an iterative fashion, as they learn more about the situation before producing the plan or order.

Commanders initiate the MDMP upon receipt of or in anticipation of a mission. Commanders and staffs often begin planning in the

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[1]   The material in this appendix was taken, with minimal editing for format, from ADPR 5-0, pp. 2-11 to 2-13, and ATTP 5-0.1, Chapter 4.

Figure 26
Steps of the Military Decision Making Process

Key inputs	Steps	Key outputs
• Higher headquarters' plan or order or a new mission anticipated by the commander	Step 1: Receipt of mission	• Commander's initial guidance • Initial allocation of time
	Warning order	
• Higher headquarters' plan or order • Higher headquarters' knowledge and intelligence products • Knowledge products from other organizations • Design concept (if developed)	Step 2: Mission analysis	• Problem statement • Mission statement • Initial commander's intent • Initial planning guidance • Initial CCIRs and EFFIs • Updated IPB and running estimates • Assumptions
	Warning order	

• Mission statement
• Initial commander's intent, planning guidance, CCIRs, and EEFIs
• Updated IPB and running estimates
• Assumptions
	Step 3: COA development	• COA statements and sketches
		  – Tentative task organization
		  – Broad concept of operations
		• Revised planning guidance
		• Updated assumptions

• Updated running estimates • Revised planning guidance • COA statements and sketches • Updated assumptions	Step 4: COA analysis (war game)	• Refined COAs • Potential decision points • War-game results • Initial assessment measures • Updated assumptions
• Updated running estimates • Refined COAs • Evaluation criteria • War-game results • Updated assumptions	Step 5: COA comparison	• Evaluated COAs • Recommended COAs • Updated running estimates • Updated assumptions
• Updated running estimates • Evaluated COAs • Recommended COA • Updated assumptions	Step 6: COA approval	• Commander-selected COA and any modifications • Refined commander's intent, CCIRs and EEFIs • Updated assumptions
	Warning order	
• Commander-selected COA with any modifications • Refined commander's intent, CCIRs, and EEFIs • Updated assumptions	Step 7: Order production	• Approved operation plan or order

SOURCE: ATTP 5-0.1, p. 4-3.

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absence of a complete and approved higher headquarters' operation plan (OPLAN) or operation order (OPORD). In these instances, the headquarters begins a new planning effort based on a warning order (WARNO) and other directives, such as a planning order or an alert order from their higher headquarters. This requires active collaboration with the higher headquarters and parallel planning among echelons as the plan or order is developed.

The MDMP facilitates collaboration and parallel planning. The higher headquarters solicits input and continuously shares information concerning future operations through planning meetings, warning orders, and other means. It shares information with subordinate and adjacent units, supporting and supported units, and other military and civilian partners. Commanders encourage active collaboration among all organizations affected by the pending operations to build a shared understanding of the situation, participate in course of action development and decisionmaking, and resolve conflicts before publishing the plan or order.

B. District Stability Framework[1]

Overview

The district stability framework (DSF) is an analysis and program management process specifically designed to help practitioners improve stability in a local area. The framework encourages unity of effort by providing field implementers from various organizations with a common framework to:

- Understand the environment from a stability-focused perspective.
- Maintain focus on the local population and its perceptions.
- Identify the root causes (sources) of instability in a specific local area.
- Design activities that specifically address the identified sources of instability.
- Monitor and evaluate activity outputs and impacts, as well as changes in overall stability.

DSF has been successfully employed by U.S. and coalition military and civilian personnel in Iraq, Afghanistan, and the Horn of Africa. The framework has four basic steps. Ideally, all relevant agencies and organizations in the area are included in the entire process, organized into a comprehensive stability working group (SWG). The four basic steps are:

- **Situational awareness:** DSF requires population-centric and stability-oriented situational awareness. The SWG achieves this by examining the area of operations (AO) from four perspectives: the

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[1]   The material in this appendix was taken, with minimal editing for format, from Center for Army Lessons Learned, "PRT Handbook Annex B—District Stability Framework," Handbook 11-16, February 2011.

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Figure 27
DSF Implementation Methodology
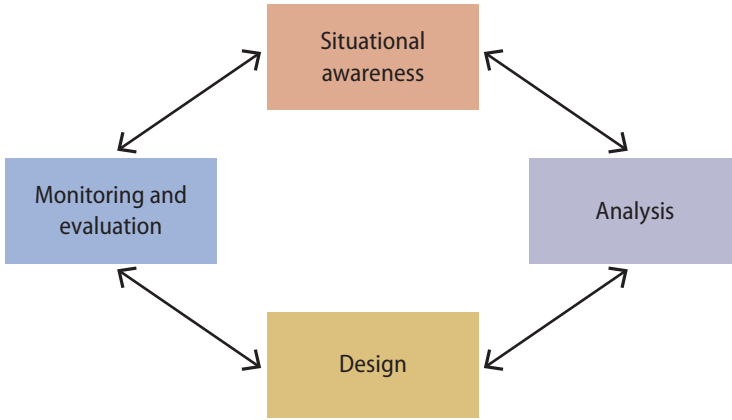
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operational environment; the cultural environment; stability and
instability dynamics; and local perceptions.
- **Analysis:** The SWG applies the information gathered in the first
  step using a specifically-designed analytical process to identify
  and prioritize the sources of instability (SOIs) in a given local area.
- **Design:** The SWG develops activities that will diminish the SOIs
  identified during the analysis phase. The process begins by
  brainstorming potential stabilization activities, then filtering and
  refining the proposed activities against a series of stabilization
  fundamentals, design principles, and prioritization criteria.
- **Monitoring and evaluation:** DSF implementers measure their
  effort and achievements on three levels: output (which measures
  activity completion), impact (which measures the effects achieved
  by individual activities), and overall stability (which measures
  broad stability conditions and trends). The lessons learned from
  this step then feed into the adjustment and development of future
  stabilization activities.

Situational Awareness

DSF uses four different "lenses" to examines the local environment
and achieve a comprehensive understanding of stability conditions
and the factors that underlie them:

- **Operational environment:** DSF uses two acronyms as checklists for identifying key information about the operational environment: PMESII (political/governance, military/security, economic, social, infrastructure, and information) identifies operational variables in the local area, while ASCOPE (areas, structures, capabilities, organizations, people, and events) focuses on civil considerations. Significantly, DSF practitioners not only identify a list of facts about the operational environment, but more importantly, also the relevance of those facts to their stabilization mission. For example, they do not just identify that the local government is hampered by corruption, but also that they may have to work around and marginalize corrupt officials to be effective.
- **Cultural environment:** DSF looks at seven categories of cultural information—identifying the major cultural groups; their interests; important cultural characteristics; traditional mechanisms of resolving conflicts; traditional authorities; current conditions that may be undermining traditional mechanisms and authorities; and how spoilers use these factors to their advantage.
- **Stability/instability dynamics:** DSF identifies potential sources of stability and instability as seen from an outsiders' perspective. For sources of stability, these include resiliencies in the society (institutions and mechanisms that help the society function peacefully), events that present a window of opportunity to enhance stability, and key actors (individuals) who are helping to enhance stability. On the other side of the equation are sources of instability, composed of local grievances, events that present a window of vulnerability in which stability may be undermined, and key actors (individuals) who are instigating instability.
- **Local perceptions:** Doctrine says that the population is the center of gravity in a counterinsurgency (COIN)—a truth that is no less applicable to other types of stability operations. Because instability is a matter of perspective, understanding the local population's perceptions is a critical factor in any effort to improve stability. DSF is particularly focused on identifying the population's priority grievances—i.e., issues about which a significant percentage of the population is concerned or upset. DSF identifies local perceptions using several possible tools, including population surveys, focus groups, key leader engagements, and polling conducted by external organizations.

One methodology for collecting local perceptions is the tactical conflict survey (TCS)—a simple, four-question survey that can be easily utilized by military units while on patrol, civilian agency implementing partners, and host-nation government and security forces. Each question is followed up by asking "why" to ensure full understanding of the interviewee's perspective. The four questions are:

- Has the number of people in the village changed in the last year?
- What are the most important problems facing the village?
- Who do you believe can solve your problems?
- What should be done first to help the village?

In addition to the four survey questions, collectors also document some contextual information that will facilitate further analysis. This includes the location and characteristics of the interviewee, including occupation, ethnicity/tribe, age, and gender.

The answers to these questions are then entered into a simple database or spreadsheet using drop-down menus to "bin" the survey answers into standardized categories. By turning this qualitative information into quantitative data, the SWG can then create charts and graphs that make the local perceptions data quickly and easily understandable. A pie chart, for example, represents a snapshot in time, while a line graph can be used to track changes in public opinion over time. An example of these pie charts, created for each neighborhood of a provincial capital in Afghanistan, is shown in Figure 30.

Analysis

After collecting information to gain situational awareness, SWGs analyze this data to identify the SOIs and to define an objective and impact indicators that will measure progress in addressing each one. The primary tool used to identify SOI is the SOI analysis matrix. This matrix is at the heart of DSF's "targeting" process. The first three situational analysis lenses typically result in a long list of potential problems and grievances that could be driving instability in an area. As the first column of the SOI analysis matrix indicates, all of these

Figure 28
DSF Local Perceptions Data by Neighborhood

🟧 Roads	🟪 Education	🟦 Employment
🟦 Potable water	🟥 Electric power	🟨 Security
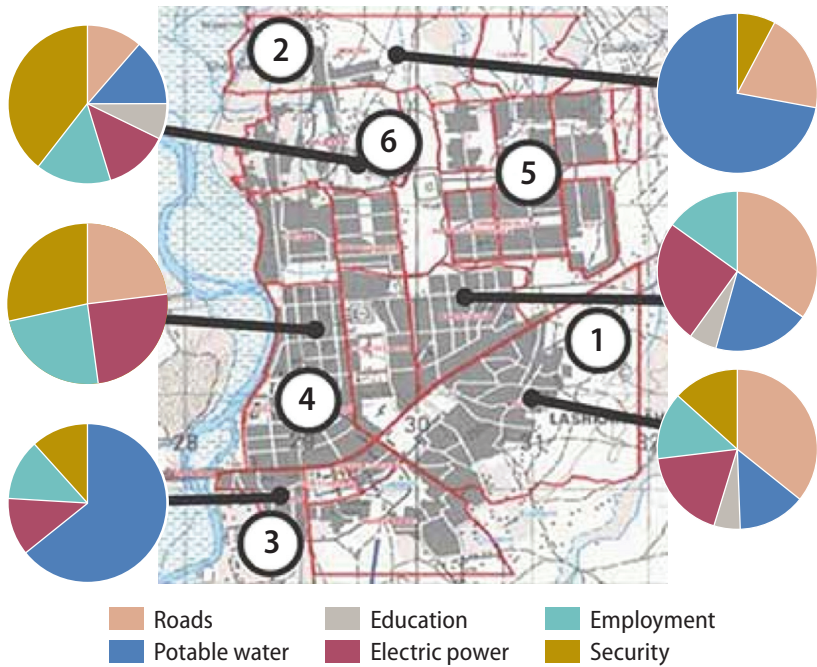
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problems may be regarded as "needs." In the three subsequent steps, however, this matrix helps to whittle this list down to a limited number of core SOIs:

- The first step is to use the fourth situational analysis lens, local perceptions, to identify *which* problems the local people really care about, i.e., their priority grievances. When using the TCS, this can be as simple as selecting each grievance that polls as a priority for, say, 10 percent or more of the population.
- The purpose of a stability operation is not simply to fulfill every wish of the local population, but specifically to create a more stable environment. To further narrow its focus, therefore, the SWG next applies the three SOI criteria—i.e., does the priority grievance:
  - Decrease support for the government (based on what *locals* actually expect of *their* government).

- Increase support for anti-government elements (which usually occurs when spoilers are seen as helping to solve the priority grievance).
- Undermine the normal functioning of society (where the emphasis must be on local norms; for example, if people have never had electricity, the continued lack of electricity can hardly be regarded as undermining the normal functioning of society).

Just meeting one of the three SOI criteria is sufficient for a priority grievance to be regarded as a SOI. The more criteria an SOI meets, however, the higher priority it may be given.

- Finally, the SOI analysis matrix distinguishes between SOIs that are symptoms versus those that are causes. If an SOI is a symptom, then addressing one or more of the other SOIs may be expected to fix the symptom as well. If an SOI is a cause, then addressing other SOIs will have little or no positive effect on it. A cause SOI must be addressed independently because it is a problem in its own right. SWGs should focus on addressing the causes of instability, not symptoms.

After identifying a discrete number of cause SOIs, SWGs fill out a tactical stability matrix (TSM) for each one. The TSM is a key DSF tool that helps further analyze and (subsequently) design activities to address each significant SOI. The TSM consists of nine columns. The first six columns are included in the analysis process, while the final three are regarded as part of the design phase. The columns in the TSM are filled out by identifying:

- The targeted SOI.
- The local population's perceptions of the SOI (perceived causes).
- The systemic causes of the SOI (i.e., other "root causes" of which the general populace may be unaware).
- An objective (a succinct goal statement or end state that will address the SOI).
- Impact indicators, also known as measures of effectiveness (MOEs) (changes in the environment that would indicate progress toward achieving the objective).
- Impact indicator data sources (where information on the impact indicators can be obtained).
- Stabilization activities to be conducted.

- Output indicators, also known as measures of performance (MOPs) (metrics related to each activity that indicate progress toward activity completion).
- Output indicator data sources (where information on the output indicators can be obtained).

Design

Once the causes, objective, and impact indicators for each SOI have been identified, the next step is to determine what stabilization activities should actually be implemented. This process starts by brainstorming possible activities, then putting those ideas through a series of filters to eliminate poor options and refine/improve others. The first filter consists of three questions known as the stability fundamentals:

- Does each activity:
  – Increase support for the government?
  – Decrease support for anti-government elements?
  – Increase institutional and societal capability and capacity?

Any proposed activity that does not meet at least one of these criteria should be eliminated. Activities that meet more than one of these criteria are preferred and may be prioritized.

Proposed activities that survive this first filter should then be refined using the seven design principles. To the extent possible, practitioners should design or modify each activity such that it:

- Ensures sustainability by the local government or institutions.
- Facilitates local ownership.
- Considers the trade-offs between short-term and long-term impacts.
- Leverages/supports other government agencies, intergovernmental organizations, nongovernmental organizations, and host-nation programs.
- Fits the local political and cultural context.
- Strengthens governmental accountability and transparency.
- Provides flexibility.

After this, SWGs flesh out the details of their proposed stabilization activities; as they do so, new information may come to light that requires them to modify their proposed activities and potentially return to previous steps of the design process. Next, SWGs screen each proposed activity against its available resources. Finally, activities for which the necessary resources are available (or can be obtained) should be prioritized based on their anticipated impact in addressing the targeted SOI. This completes Column 7 of the TSM.

Once the appropriate activities are identified, SWGs complete the TSM by identifying output indicators (MOPs) and output indicator data sources that will enable them to determine whether an activity is proceeding as planned and, ultimately, when it has been completed.

Lastly in the design phase, SWGs use the synchronization matrix to synchronize and prioritize identified activities by establishing a logical sequence for the activities, coordinate the activities along the lines of operation, and assign activities and tasks to specific organizations.

Monitoring and Evaluation

The final step in DSF—evaluation—takes place during and after the implementation of stabilization activities. Evaluation is conducted on three levels. The first two have already been identified as part of the TSM.

- **Output indicators** (MOPs) simply track implementation of an activity. They answer the question, "Is the activity progressing?" and in the long run, "Is the activity complete?" Examples of output indicators might be the number of miles of road paved or number of police trained. Output indicators are monitored during the implementation of an activity, until it is completed.
- **Impact indicators** (MOEs) measure the effect an activity achieved. They answer the question, "Did the activity have the intended effect?" Examples might be decreased travel time (for a road proj-

ect) or decreased criminal activity (for a police training activity). They are generally evaluated only after an activity is completed.

The final evaluation level is:

• **Overall stability**, which takes into account the *stabilization* impact of all the activities a unit has conducted over a period of several weeks or months. It asks, "Is stability increasing or decreasing?" Measuring the change in overall stability is a key component of the DSF process. By identifying and measuring a common basket of stability-focused indicators, it is possible to track the change in stability for a given district. When aggregated, they can provide a measurement of overall changes in stability over time for a given district.

Suggested indicators for tracking overall stability include:

• District government recognition (government legitimacy in the eyes of the population).
• Local-on-local violence.
• Economic activity.
• Host-nation security force presence.
• Population freedom of movement.
• Local perceptions of the government.
• Local perceptions of security conditions.

As each of these three levels of monitoring and evaluation occurs, SWGs should identify lessons that can help them improve future stabilization activities, or sustain successful ones. For example, implementers may learn that certain external factors prevented their program from being successful. Subsequent efforts may need to address these external factors first, or take a completely different approach to addressing the SOIs.

Summary

DSF is specifically designed to help overcome many of the challenges to successful stability operations:

Table 9
Example Tactical Stability Matrix

		Analysis					Design		
Source of Instability	Causes	Causes (Systemic)	Objective	Impact Indicators	Impact Indicator Data Sources		Activities	Output Indicators	Output Indicator Data Sources
Lack of water	We need more wells We need more drinking water We need water for crops	Tribal competition prevents people cooperating to dig wells or irrigation Culture of dependency limits people's willingness to dig wells or irrigation Water table could be dropping (investigate)	GIRoA helps increase availability of drinking water and expand amount of land under irrigation	Fewer people citing water as their primary concern Support for government goes up More land under irrigation Higher crop yields More local food for sale in bazaar	DSF surveys Patrol reports Interviews with local households, farmers, shopkeepers Key leader engagements		Drip irrigation systems Clean karezes Organize communities to dig own wells Build water cisterns Build/check dams Involve MRRD to establish community development councils (CDCs)	Number of drip irrigation systems operational Number of operational karezes Number of wells dug by local communities Number of water cisterns constructed Number of check dams built	Patrol reports Direct observation Subgovernor reports Agriculture Department reports Interviews with local communities Contractor reports MRRD reports

Table 9—Continued

Source of Instability	Causes	Analysis				Design		
		Causes (Systemic)	Objective	Impact Indicators	Impact Indicator Data Sources	Activities	Output Indicators	Output Indicator Data Sources
		Karezes may be clogged up (investigate)		Households spend less time fetching water			Number of CDCs established	
		Public wells are too far from some people's homes						
		Flood irrigation is inefficient and adds salt to the soil						

- DSF keeps SWGs focused on the center of gravity for COIN and stability operations—the population and its perceptions.
- DSF provides a common operating picture for both military and civilian agencies. By making the population's perspective the focal point, these organizations can focus their varied resources and expertise on a single, agreed set of priorities.
- DSF helps prioritize activities based on their importance to the local populace and their relevance to the over-arching mission of stabilizing the area.
- DSF enhances continuity between units. DSF data can be easily passed along from one unit to the next—establishing a clear base-line for the problems identified, the steps taken to address those problems, and the impact those activities achieved.
- DSF empowers implementers at the tactical level by giving them hard data that can be used as a basis for decision making at their level and for influencing decisions at higher levels.
- The DSF framework forces us to identify both MOPs and MOEs for our activities—rather than the all-too-common pattern of only tracking the MOPs.
- By tracking indicators of Overall Stability, DSF helps us determine whether we are actually making progress toward stabilizing the environment.
- By identifying the issues that matter most to the population, DSF helps identify information operations themes that actually reso-nate with the population.

Also, see the DSF Quick Reference Guide available from the U.S. Army Peacekeeping and Stability Operations Institute Document Reposi-tory (undated).

C. Protection/Threat and Hazard Assessment[1]

Protection Principles

The following principles of protection provide military professionals with a context for implementing protection efforts, developing schemes of protection, and allocating resources:

- **Comprehensive.** Protection is an all-inclusive utilization of complementary and reinforcing protection tasks and systems available to commanders, incorporated into the plan, to preserve the force.
- **Integrated.** Protection is integrated with other activities, systems, efforts, and capabilities associated with unified land operations to provide strength and structure to the overall effort. Integration must occur vertically and horizontally with unified action partners throughout the operations process.
- **Layered.** Protection capabilities are arranged using a layered approach to provide strength and depth. Layering reduces the destructive effect of a threat or hazard through the dispersion of energy or the culmination of the force.
- **Redundant.** Protection efforts are often redundant anywhere that a vulnerability or a critical point of failure is identified. Redundancy ensures that specific activities, systems, efforts, and capabilities that are critical for the success of the overall protection effort have a secondary or auxiliary effort of equal or greater capability.
- **Enduring.** Protection capabilities are ongoing activities for maintaining the objectives of preserving combat power, populations, partners, essential equipment, resources, and critical infrastructure in every phase of an operation.

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[1] The material in this appendix was taken, with minimal editing for format, from ADRP 3-37, p. 1-1.

Antiterrorism (AT) Measures[2]

AT consists of defensive measures that are used to reduce the vulnerability of individuals and property to terrorist acts, including limited response and containment by local military and civilian forces. AT is a consideration for all forces during all military operations.

AT is an integral part of Army efforts to defeat terrorism. Terrorists can target Army elements at any time and in any location. By effectively preventing and, if necessary, responding to terrorist attacks, commanders protect all activities and people so that Army missions can proceed unimpeded. AT is neither a discrete task nor the sole responsibility of a single branch; all bear responsibility. AT must be integrated into all Army operations and considered at all times. Awareness must be built into every mission, every Soldier, and every leader. Integrating AT represents the foundation that is crucial for Army success.

Typical Army AT programs are composed of several adjunct and information programs, including tasks for specialized, nonprotection military occupational specialties. AT includes the following areas at a minimum:

- Risk management (threat, critical asset, and vulnerability assessments of units, installations, facilities, and bases/base camps).
- AT planning (units, installations, facilities, and bases).
- AT awareness training and command information programs.
- The integration of various vulnerability assessments of units, installations, facilities, bases/base camps, personnel, and activities.
- AT protection measures to protect individual personnel, high-risk personnel, physical assets (physical security), and designated critical assets and information.
- Resource application.
- Civil and military partnerships.

Protection/Threat Assessment

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[2] See FM 3-37.2, *Antiterrorism*, February 2011, for additional information on AT measures.

- Force protection condition systems to support terrorist threat and incident response plans.
- Comprehensive AT program review.

Threats and Hazards

Threats and hazards have the potential to cause personal injury, illness, or death; equipment or property damage or loss; or mission degradation. Commanders and staffs analyze the following potential threats and hazards:

- **Hostile actions.** Threats from hostile actions include any capability that forces or criminal elements have to inflict damage upon personnel, physical assets, or information. These threats may include improvised explosive devices, suicide bombings, network attacks, mortars, asset theft, air attacks, or CBRN weapons.
- **Nonhostile activities.** Nonhostile activities include hazards associated with Soldier duties within their occupational specialty, Soldier activity while off duty, and unintentional actions that cause harm. Examples include on- and off-duty accidents, OPSEC violations, network compromises, equipment malfunctions, or accidental CBRN incidents.
- **Environmental conditions.** Environmental hazards associated with the surrounding environment could potentially degrade readiness or mission accomplishment. Weather, natural disasters, and diseases are common examples. The staff also considers how military operations may affect noncombatants in the area of operations. Such considerations prevent unnecessary collateral damage and regard how civilians will affect the mission. Heavy civilian vehicle or pedestrian traffic adversely affects convoys and other operations.

Commanders use the METT-TC mission variables to describe the operational environment, including threats that may impact protection. In most cases, they can draw the relevant information from an ongoing analysis of the operational environment using the PMESII-PT operational variables.

Threats

The various actors in any area of operations can qualify as a threat, enemy, adversary, neutral, or friendly. Land operations often prove complex because actors intermix, often with no easy means to distinguish one from another.

- A threat is any combination of actors, entities, or forces that have the capability and intent to harm United States forces, United States national interests, or the homeland (ADRP 3-0). Threats may include individuals, groups of individuals (organized or not organized), paramilitary or military forces, nation-states, or national alliances. When threats execute their capability to do harm to the United States, they become enemies.
- An enemy is a party identified as hostile against which the use of force is authorized (ADRP 3-0). An enemy is also called a combatant and is treated as such under the law of war.
- An adversary is a party acknowledged as potentially hostile to a friendly party and against which the use of force may be envisaged (JP 3-0).
- A neutral is a party identified as neither supporting nor opposing friendly or enemy forces (ADRP 3-0).
- A friendly is a contact positively identified as friendly (JP 3-01).

Hybrid Threats

The term *hybrid threat* has evolved to capture the seemingly increased complexity of operations, the multiplicity of actors involved, and the blurring between traditional elements of conflict. A hybrid threat is the diverse and dynamic combination of regular forces, irregular forces, terrorist forces, and/or criminal elements unified to achieve mutually benefitting effects (ADRP 3-0). Hybrid threats combine regular forces, who are governed by international law and military traditions and customs, with unregulated forces who act with no restrictions on violence or their targets. These may involve nation-state actors who employ protracted forms of warfare, possibly using proxy forces to coerce and intimidate, or nonstate actors using operational concepts and high-end capabilities traditionally associated

with states. Such varied forces and capabilities enable hybrid threats to capitalize on perceived vulnerabilities, making them particularly effective.

Hazards

A hazard is a condition with the potential to cause injury, illness, or death of personnel; damage to or loss of equipment or property; or mission degradation (JP 3-33). Hazards are usually predictable and preventable and can be reduced through effective risk management efforts. Commanders differentiate hazards from threats and develop focused schemes of protection and priorities that match protection capabilities with the corresponding threat or hazard, while synchronizing those efforts in space and time. However, hazards can be enabled by the tempo or friction or by the complacency that sometimes develops during extended military operations.

Threat and Hazard Assessment

Personnel from all staff sections and warfighting functions help conduct threat and hazard analysis. This analysis comprises a thorough, in-depth compilation and examination of information and intelligence that address potential threats and hazards in the area of operations. The integrating processes (intelligence preparation of the battlefield, targeting, and risk management) provide an avenue to obtain the threats and hazards that are reviewed and refined. Threat and hazard assessments are continuously reviewed and updated as the operational environment changes.

Considerations for the threat and hazard assessment include

- enemy and adversary threats
- operational capabilities
- intentions
- activities
- foreign intelligence and security service threats
- crimes

- civil disturbances
- medical and safety hazards
- CBRN weapons and toxic industrial material
- other relevant aspects of the operational environment
- incident reporting and feedback points of contact.

The threat and hazard assessment results in a comprehensive list of threats and hazards and determines the likelihood or probability of occurrence of each threat or hazard. Table 10 shows examples of potential threats and hazards in an area of operations. In the context of assessing risk, the higher the probability or likelihood of a threat or hazard occurring, the higher the risk of asset loss.

Table 10
Potential Threats and Hazards

Area of Concern	Potential Threats and Hazards
Area security	• Assassination of, or attacks on, important personnel • Enemy, adversary or terrorist attacks on facilities • Ambushes or attacks on convoys • Enemy or adversary attacks on convoy routes
Safety	• Hazards associated with enemy or adversary activity • Accident potential • Weather or environmental condition • Equipment
Fratricide avoidance	• Poor or reduced awareness • Inexperienced or poorly equipped or disciplined personnel • Complex or poorly defined mission against an experienced enemy or adversary
OPSEC	• Accidental friendly release of essential elements of friendly information • Enemy or adversary collection and exploitation of essential elements of friendly information • Enemy or adversary capture of unclassified friendly information • Physical security violations • Enemy or adversary intelligence gathering
AT	• Improvised explosive devices • Suicide bombs • Mail bombs • Snipers • Standoff weapons • WMD • Active shooters • Insider threats

Table 10—Continued

Survivability	• Environmental conditions • Capabilities of threat weapons and sensors
Force health protection	• Endemic and epidemic diseases • Environmental factors • Diseases from animal bites, poisonous plants, animals, or insects • Risks associated with the health, sanitation, or behavior of the local populace
CBRN	• CBRN weapons • Toxic industrial materials
EOD	• Explosive ordnance and hazards (friendly and enemy) • Adversary attacks on personnel, vehicles, or infrastructure
Air and missile defense	• Artillery • Mortars • Rockets • Ballistic and cruise missiles • Fixed- and rotary-wing aircraft • Unmanned aerial systems
Personnel recovery	• Events that separate or isolate individuals or small groups of friendly forces from the main force

NOTES: AT = antiterrorism; CBRN = chemical, biological, radiological, and nuclear; EOD = explosive ordnance disposal; OPSEC = operations security; WMD = weapons of mass destruction.

Criticality Assessment

A criticality assessment identifies key assets that are required to accomplish a mission. It addresses the impact of a temporary or permanent loss of key assets or the unit ability to conduct a mission. A criticality assessment should also include high-population facilities (recreational centers, theaters, sports venues) which may not be mission-essential. It examines the costs of recovery and reconstitution, including time, expense, capability, and infrastructure support. The staff gauges how quickly a lost capability can be replaced before giving an accurate status to the commander. The general sequence for a criticality assessment is

• Step 1. List the key assets and capabilities.
• Step 2. Determine if critical functions or combat power can be substantially duplicated with other elements of the command or an external resource.

- Step 3. Determine the time required to substantially duplicate key assets and capabilities in the event of temporary or permanent loss.
- Step 4. Set priorities for the response to threats toward personnel, physical assets, and information.

The protection cell staff continuously updates the criticality assessment during the operations process. As the staff develops or modifies a friendly COA, information collection efforts confirm or deny information requirements. As the mission or threat changes, initial criticality assessments may also change, increasing or decreasing the subsequent force vulnerability. The protection cell monitors and evaluates these changes and begins coordination among the staff to implement modifications to the protection concept or recommends new protection priorities. Priority intelligence requirements, running estimates, measures of effectiveness (MOEs), and measures of performance (MOPs) are continually updated and adjusted to reflect the current and anticipated risks associated with the operational environment.

Vulnerability Assessment

A vulnerability assessment is an evaluation (assessment) to determine the magnitude of a threat or hazard effect against an installation, personnel, unit, exercise, port, ship, residence, facility, or other site. It identifies the areas of improvement necessary to withstand, mitigate, or deter acts of violence or terrorism. The staff addresses who or what is vulnerable and how it is vulnerable. The vulnerability assessment identifies physical characteristics or procedures that render critical assets, areas, infrastructures, or special events vulnerable to known or potential threats and hazards. Vulnerability is the component of risk over which the commander has the most control and greatest influence. The general sequence of a vulnerability assessment is as follows:

- Step 1. List assets and capabilities and the threats against them.

- Step 2. Determine the common criteria for assessing vulnerabilities.
- Step 3. Evaluate the vulnerability of assets and capabilities.

Vulnerability evaluation criteria may include the degree to which an asset may be disrupted, quantity available (if replacement is required due to loss), dispersion (geographic proximity), and key physical characteristics.

DOD has created several decision support tools to perform criticality assessments in support of the vulnerability assessment process, including

- MSHARPP (mission, symbolism, history, accessibility, recognizability, population, and proximity). MSHARPP is a targeting analysis tool that is geared toward assessing personnel vulnerabilities, but it also has application in conducting a broader analysis. The purpose of the MSHARPP matrix is to analyze likely terrorist targets and to assess their vulnerabilities from the inside out.
- CARVER (criticality, accessibility, recuperability, vulnerability, effect, and recognizability). The CARVER matrix is a valuable tool in determining criticality and vulnerability. For criticality purposes, CARVER helps assessment teams and commanders (and the assets that they are responsible for) determine assets that are more critical to the success of the mission.

D. Nine-Step Cultural Methodology[1]

This extract from the *Red Team Handbook* is an analytic tool to promote better understanding of a foreign culture. By understanding others better, leaders and planners may be better able to engage a foreign culture. It should be used at the start of the decision making process to ensure that alternative perspectives and information is available during both the design and mission analysis steps of the process.

Thorough use of the cultural analytical methodology will ensure an enhanced and more nuanced decision as the methodology presents information to the commander through the lens of the four ways of seeing. Wise use of the four ways of seeing step in the method will present a commander with an initial first look at his mission and associated tasks through the eyes of the range of potential adversaries in a region as well as the people of the region.

Steps 1 & 9 are analytical. Steps 2–8 focus on collection. Step 9 must occur last and Step 1 must occur first, but thereafter each situation may present information or opportunities in such a way as to alter your sequence (Figure 29).

- Step 1—Establish a baseline of understanding by examining the four ways of seeing.
  - **How X views itself.** This must be the first step of any cross cultural analysis. *What are our fundamental beliefs about our motives, our values, and ourselves?*

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[1]   The material in this appendix was taken, with minimal editing for format, from *Red Team Handbook*, Ft. Leavenworth, Kan.: University of Foreign Military and Cultural Studies, 2012.

**Figure 29
Nine-Step Cultural Methodology**
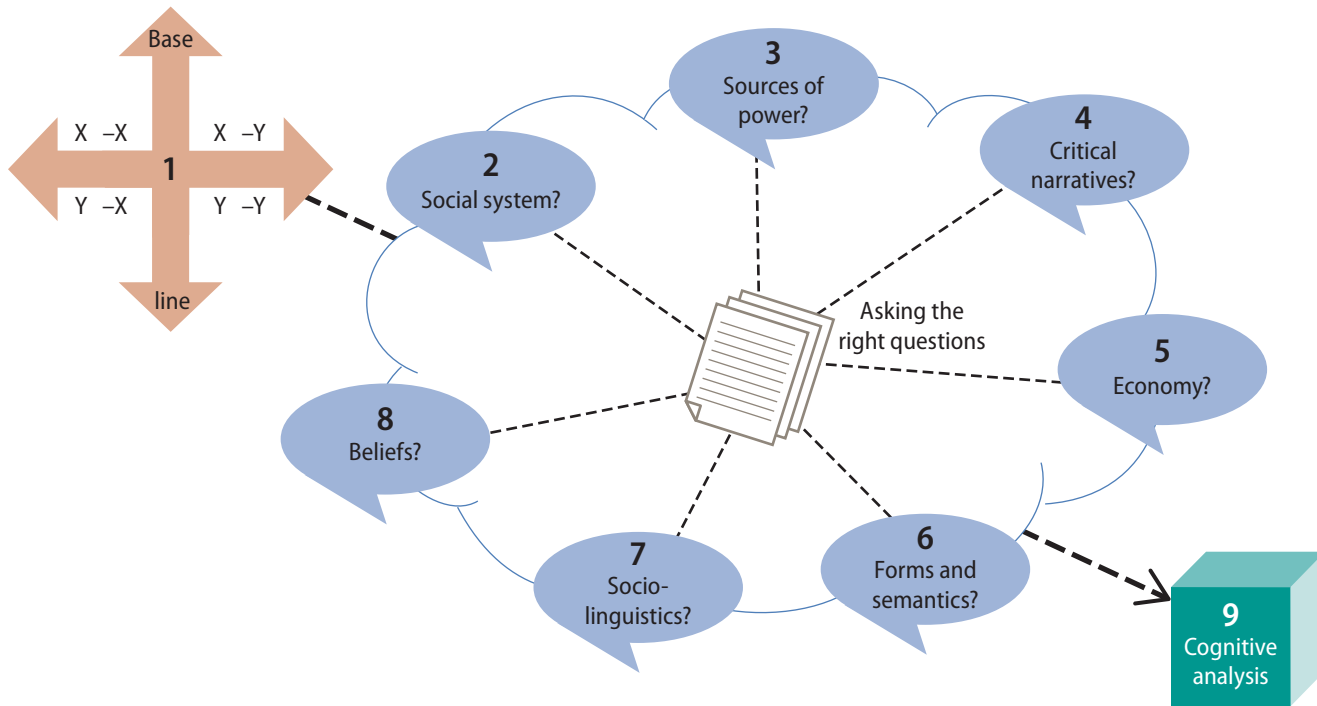
- **How Y views itself.** The next critical step is to identify what our "object believes about itself". People must be careful not to allow personal judgment to color this analysis. If for instance, they believe they are God's chosen group—whether we believe "they are," or not, is not germane at this time.
- **How X views Y.** The next step is to address 'how we view them' as well as identify disconnects between 'how we view them' and 'how they view themselves'—these are the critical friction points that cultural analysis and planning must address. Our treatment of the object group must be consistent and 'fair' based on how they view themselves rather than how we view them.
- **How Y views X.** In turn, we need to understand how they view us vice how we view our actions and ourselves. We must direct our info campaign at closing the gap between their perception of us and how we want to be viewed.
- Step 2—What defines the Social System?
  - Roles of family and tribe.
  - Roles in ascribing status: region, education, religion, etc.
  - Is status acquired through birth or achieved through action (social mobility)?
  - What are the common child rearing practices, and how do they differ by gender and class?
  - From which side of the family does descent originate?
  - What is the nature of marriage in society: who decides, what are the power relationships internal/external to the married unit, monogamy, or polygamy?
  - Is there a nuclear family or extended family units?
  - What is the social contract in each state? What do the citizens expect the state to provide and in return for what? Is this contract intact?
  - Is the society pluralistic, synergetic, or assimilatory?
- Step 3—What are the sources of power? For example: charisma, violence, legal basis, etc.
  - Do the powerful live 'for' or 'off' politics?
  - What is the role of patronage, what characterizes a patron?
  - Are politics used for religious purposes or religion used for political purposes?
  - What are the key institutions in the social structure, how did the leaders of those institutions acquire their role?

- How do state bureaucracies relate to other elements of the social structure—tribe, religion ethnicity?
- Step 4—What are the critical narratives of the cultural history?
  - What do people believe about themselves and where they came from?
  - What are the stories taught in school?
  - What are the key myths associated with social control?
  - What are the societies' origin myths?
  - What role did colonialism play?
  - How does strength of nationhood and citizenship relate to a core concept?
- Step 5—What is the role of the formal and informal economy?
  - Is what would be termed bribery and corruption in the West endemic? If so, what do locals consider corrupt?
  - Do the elites own wealth, or own power that in turn accumulates wealth?
  - How is the economy fundamentally different or similar to our own?
    - Who pays what for individual health care?
    - What is the nature of home ownership? Elderly care? Investments?
  - What kind of goods and services are found in the informal economy? How big is the informal economy vice the formal economy? If it is large—why?
- Step 6—What Cultural forms and Semiotics are endemic to the society?
  - What do they celebrate, what are the symbols associated with those celebrations, how does this reflect a different perspective than the West (rituals, ceremonies, etc.)? Any rites of passage, degradation, enhancement, renewal, conflict reduction, or integration?
  - How do they sanction societal members? What is the role of criticism/alienation?
  - Who are the heroes –what stories are told about them, what traits emphasized?
  - What is the role of emotional outburst—restrained, accepted, gender specific?
- Step 7—What sociolinguistics are evident?
  - What is the nature of routine greetings and farewells?
  - What are the concepts that translate only with difficulty—identify and attempt to understand them?

- What US concepts present difficulty to linguists attempting to translate into the native language –indicates that the underlying logic of the concept may be foreign as well?
- What is the role of exaggeration and overstatement?
- Step 8—What are their core emotional beliefs?
    - For what reasons would people in the society kill someone?
    - On behalf of the state?
    - To restore personal or family honor?
    - As appropriate vengeance? (Rule of law—rape, murder, incest, etc.)
    - To what degree do they value human life?
- Step 9—Conduct a cognitive analysis. In what ways does the collected data (steps 2–8) shape how 'they' think? Several factors underpin the development of culture. They include:
    - Geography—desert dwellers think differently about the world than forest dwellers.
    - History—historically invaded or isolated, ruled by heredity or ruled by law.
    - Religion—belief system of our opponent, key sites, organization of society, interpersonal relationships between our forces and the population.
    - Significant emotional events in the life of the country—coups, assassinations, contact with other cultures.
    - Economics—agrarian, nomadic, industrial.

Abbreviations

ADRP	Army Doctrinal Reference Publication
AO	area of operations
ASCOPE	areas, structures, capabilities, organizations, people, and events
AT	antiterrorism
AWG	Asymmetric Warfare Group
CARVER	criticality, accessibility, recuperability, vulnerability, effect, and recognizability
CBRN	chemical, biological, radiation, and nuclear
CC	critical capability
CCIR	commander's critical information requirement
CDC	community development council
COA	course of action
COG	center of gravity
COIN	counterinsurgency
CR	critical requirement
CV	critical vulnerability
DoD	Department of Defense
DSF	district stability framework
EEFI	essential element of friendly information
GIRoA	Government of the Islamic Republic of Afghanistan
HQ	headquarters
IPB	intelligence preparation of the battlefield

JFC	joint force commander
JIPOE	Joint Intelligence Preparation of the Operational Environment
JOPP	Joint Operation Planning Process
JP	joint publication
LOE	line of effort
LOO	line of operation
MCPP	Marine Corps Planning Process
MCWP	Marine Corps warfighting publication
MDMP	military decision making process
METT-TC	mission, enemy, terrain and weather, troops and support available, time available, civil considerations
MOE	measures of effectiveness
MOP	measures of performance
MRRD	Ministry of Rural Reconstruction and Development
MSHARPP	mission, symbolism, history, accessibility, recognizability, population, and proximity
OBJ	objective
OE	operational environment
OPLAN	operation plan
OPORD	operation order
PMESII	political, military, economic, social, infrastructure, and informational
PMESII-PT	political, military, economic, social, infrastructure, informational, physical environment, and time
SOI	sources of instability
SWG	stability working group
TCS	tactical conflict survey
TSM	tactical stability matrix

VAM	vulnerability assessment method
VAMPG	Vulnerability Assessment Method Pocket Guide
WARNO	warning order
WAS	wide-area security

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The U.S. Army Asymmetric Warfare Group has used the Vulnerability Assessment Method (VAM) for a variety of large-scale interagency exercises at the operational and theater levels and previously commissioned a handbook for that purpose. Because the group also advises deployed tactical units, it asked RAND Arroyo Center to revise the existing handbook to make it more useful at the operational and tactical levels, with a primary audience of brigade combat team commanders and staffs. The resulting document is designed to fit into a cargo pocket. It explains how the VAM can be embedded into doctrinal planning processes and describes a process for identifying adversary, friendly, and other key stakeholder centers of gravity to support the development of plans that will exploit adversary vulnerabilities while protecting friendly ones. It can help commanders and staffs, and other leaders and planners, identify what is most important in the adversary and nonadversary systems to avoid wasting resources by pursuing less-productive courses of action.
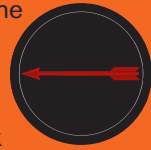
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