ATP 5-0.1

ARMY DESIGN METHODOLOGY

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Headquarters, Department of the Army

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Army Design Methodology

1. Change 1 to ATP 5-0.1, 1 July 2015, replaces all occurrences of the term “gender” with the term “sex” in accordance with Executive Order 14168, dated 20 January 2025.

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Preface

Army techniques publication (ATP) 5-0.1, *Army Design Methodology* (ADM) is part of a continuing effort focused on improving the critical and creative thinking abilities of leaders and teams to understand and solve problems. This publication describes ADM in the context of the operations process and offers techniques for forming and leading teams for group problem solving. It describes the major activities of ADM and provides techniques for framing operational environments, framing problems, developing an operational approach, and reframing.

To comprehend the doctrine contained in this publication, readers must first understand the fundamentals of the operations process described in Army Doctrine Reference Publication (ADRP) 5-0, *The Operations Process*. In addition, readers must understand the fundamentals of mission command described in ADRP 6-0, *Mission Command* and the fundamentals of leadership found in ADRP 6-22, *Leadership*. Readers must also have a solid foundation in various processes and procedures of mission command addressed in Field Manual (FM) 6-0, *Commander and Staff Organization and Operations*.

ADM takes an interdisciplinary approach to planning and problem solving incorporating ideas associated to critical and creative thinking, leadership, decisionmaking, and organizational learning. The professional field of books and articles on these disciplines is vast and rich. Readers are encouraged to continue their study on these topics beyond the material offered in this ATP.

The principal audience for this publication is Army commanders and staffs. Commanders and staffs of Army headquarters serving as joint task force or multinational headquarters should refer to applicable joint or multinational doctrine concerning joint or multinational planning. Trainers and educators throughout the Army will also use this publication as a guide for instructing ADM.

Commanders, staffs, and subordinates ensure their decisions and actions comply with applicable U.S., international, and, in some cases, host nation laws and regulations. Commanders at all levels ensure their Soldiers operate in accordance with the law of war and the rules of engagement. (See FM 27-10.)

ATP 5-0.1 uses joint terms where applicable. Selected joint and Army terms and definitions appear in both the glossary and the text, the term is italicized, and the number of the proponent publication follows the definition. ATP 5-0.1 is not the proponent publication (the authority) for any terms.

ATP 5-0.1 applies to the Active Army, the Army National Guard/Army National Guard of the United States, and the United States Army Reserve unless otherwise stated.

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Introduction

Recognizing and solving problems is essential. Faced with unfamiliar or ambiguous situations, commanders and staffs may feel overwhelmed by uncertainty. This is where Army design methodology (ADM) can help. By first framing an operational environment and associated problems, ADM enables commanders and staffs to think about the situation before developing ways to solve those problems. Based on this understanding, commanders and staffs are better equipped to develop approaches to overcome identified problems.

Design thinking in Army doctrine resulted from a recognition that commanders and staffs had difficulty understanding complex situations. This hindered their ability to distinguish between symptoms of problems and their root causes. This difficulty led to solutions that addressed symptoms of problems rather than problem causes. Beginning in 2005, the Army and Marine Corps began a multi-year effort to examine methods to help commanders and staffs understand complex, ill-structured problems and visualize approaches to solve them. Collectively referred to as "design," the Army and Marine Corps incorporated design into their respective doctrines by 2010. In 2011, the joint community adopted the critical and creative thinking aspects of design in Joint Publication (JP) 5-0, *Joint Operations Planning*. In 2012, the Army modified its doctrine on design with the publication of Army Doctrine Publication (ADP) 5-0, *The Operations Process*. ADP 5-0 replaced the term "design" with "Army design methodology" and associated ADM with conceptual planning.

ADM helps commanders and staffs with understanding, visualizing, and describing operations and it is an aid to conceptual planning. During operations, ADM supports organizational learning as the command adapts to changing circumstances. The potential benefits for using ADM include:

- Enhanced dialogue between commanders, staffs, and unified action partners.
- Greater understanding of an operational environment.
- Deeper understanding of problems and their causes.
- Shared understanding of the operation's purpose.
- Shared visualization of the conduct of an operation.
- Enhanced guidance to drive detailed planning.
- Expanded role of the assessment process.

This publication contains six chapters and two appendices.

Chapter 1 begins with an overview of mission command and the operations process. A review of the fundamentals of planning follows. Next, this chapter defines ADM and describes its major activities. The chapter concludes with ADM's key concepts.

Chapter 2 addresses preparing for ADM. It begins with a discussion of when to employ ADM followed by a discussion of commander involvement. The chapter then offers considerations for forming and leading a planning team for the employment of ADM. This chapter concludes with discussions on sharing the workload and resources commonly used when performing ADM.

Chapter 3 provides a general discussion of an operational environment and describes the operational variables used to understand, visualize, and describe an operational environment. Next, this chapter offers an approach for framing an operational environment. The chapter concludes with tools and techniques commanders and staffs use to help understand both the current and future states of an operational environment.

Chapter 4 begins with a general discussion of problems. Next, this chapter describes activities associated with problem framing. The chapter concludes with tools and techniques used in framing problems.

Chapter 5 defines an operational approach and describes its purpose. Next, this chapter describes activities associated with developing an operational approach to include documenting results and transitioning to

detailed planning. The chapter concludes with several tools and techniques used in developing an operational approach.

Chapter 6 begins with a discussion of organizational learning. Next, it describes how assessment and reframing helps commanders adapt operations to changing circumstances. The chapter concludes with tools and techniques available to help the commander and staff with assessing operations and reframing.

Appendix A serves as an aid to effective thinking by describing several cognitive biases and logic errors to guard against.

Appendix B provides an example of framing an operational environment from a systems perspective utilizing a counter drug vignette.

Chapter 1

Fundamentals of Army Design Methodology

This chapter begins with an overview of mission command and the operations process. A review of the fundamentals of planning follows. Next, this chapter defines Army design methodology (ADM) and describes its major activities. The chapter concludes with key concepts of ADM.

MISSION COMMAND AND THE OPERATIONS PROCESS

1-1. To appreciate how ADM helps commanders and staffs understand, visualize, and describe operations, leaders must first understand the nature of operations. Military operations are human endeavors characterized by the continuous, mutual adaptation of give and take, moves, and countermoves among all participants. In operations, friendly forces engage a thinking, multifaceted enemy. While friendly forces try to impose their will on the enemy, the enemy resists and seeks to impose its will on the friendly force. In addition, operations occur in and among populations whose desires influence and are influenced by military operations. The results of these interactions are often unpredictable and in many instances uncontrollable.

1-2. Uncertainty pervades operations with unknowns about the enemy, the people, and the surroundings. Commanders cannot predict with certainty how enemies will act and react or how events will develop. During operations leaders make decisions, develop plans, and direct actions under varying degrees of uncertainty. Commanders counter the uncertainty of operations by empowering subordinates at the scene to make decisions, act, and quickly adapt to changing circumstances. As such, mission command guides commanders, staffs, and subordinates throughout the operations process.

1-3. *Mission command* is the exercise of authority and direction by the commander using mission orders to enable disciplined initiative within the commander's intent to empower agile and adaptive leaders in the conduct of unified land operations (ADP 6-0). This philosophy of command requires an environment of mutual trust and shared understanding among commanders, staffs, and subordinates. It requires a command climate where commanders encourage subordinates to accept risk and exercise initiative to seize opportunities and counter threats within the commander's intent. Using mission orders, commanders issue directives to subordinates that emphasize results to be attained, not how to achieve them. Doing this minimizes detailed control and allows subordinates the greatest possible freedom of action to accomplish missions within the commander's intent. (See ADRP 6-0 for a detailed discussion of mission command.)

1-4. The Army's framework for exercising mission command is the *operations process*—the major mission command activities performed during operations: planning, preparing, executing, and continuously assessing the operation (ADP 5-0). Commanders, supported by their staffs, use the operations process to understand, visualize, and describe their operational environment; make and articulate decisions; and direct, lead, and assess military operations.

1-5. The activities of the operations process are not discrete; they overlap and recur as circumstances demand. Planning starts an iteration of the operations process. Upon completion of the initial order, planning continues as leaders revise the plan based on changing circumstances. Preparing begins during planning and continues through execution. Execution puts a plan into action by applying combat power to seize, retain, and exploit the initiative. Assessing is continuous and influences the other three activities.

1-6. Both the commander and staff have important roles in the operations process. Figure 1-1 on page 1-2 shows how the commander drives the operations process by understanding, visualizing, describing, directing, leading, and assessing. The staff helps the commander understand situations and problems, implement decisions, control operations, and assess progress. In addition, the staff helps subordinate units (commanders and staffs) and keeps units and organizations outside the headquarters informed throughout the operations process. See ADRP 5-0 for a detailed discussion of the operations process.

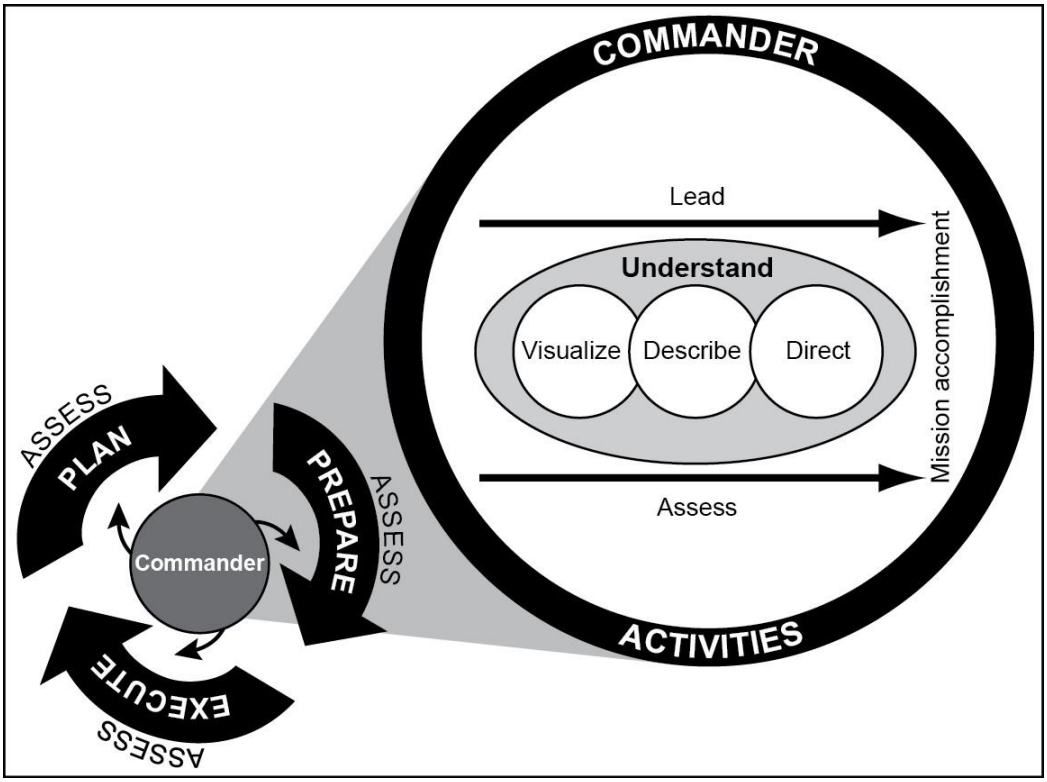


Figure 1-1. The operations process

PLANNING

1-7. *Planning* is the art and science of understanding a situation, envisioning a desired future, and laying out effective ways of bringing that future about (ADP 5-0). Planning helps leaders understand and develop solutions to problems, coordinate and synchronize action, and anticipate events to adapt to changing circumstances. In its simplest form, planning helps determine how to move from the current state of affairs to a more desirable future state.

1-8. Imperfect knowledge and assumptions about the future are inherent in all planning. Planning cannot predict how enemies will react or how civilians will respond to the friendly force or the enemy. Nonetheless, the understanding and learning that occurs during planning have great value. Even if units do not execute the plan as envisioned—and few ever do—planning results in improved situational understanding that facilitates future decisionmaking.

1-9. A product of planning is a plan or order—a directive for future action. Commanders issue plans and orders to subordinates to communicate their understanding of the situation and their visualization of how the operation should unfold. A plan is a continuous, evolving framework of anticipated actions that maximizes opportunities. It guides subordinates as they progress through each phase of the operation. The measure of a good plan is not whether execution transpires as planned, but whether the plan facilitates effective action in the face of unforeseen events.

1-10. Planning is a continuous learning activity of the operations process. While planning starts an iteration of the operations process, planning does not stop with production of an operations order. During preparation and execution, the order is refined as the situation changes. Through assessment, subordinates and unified action partners provide feedback that often results in modifications to the order. In some circumstances, commanders determine that the current order (including associated branches and sequels) is no longer relevant to the situation. In these instances, instead of modifying the current order, commanders reframe their understanding of the operational environment and problems and develop a new plan. (See chapter 6 for a discussion on assessment and reframing.)

1-11. Planning has a conceptual component and a detailed component as shown in figure 1-2. Conceptual planning involves understanding operational environments and problems, determining the operation's end state, and visualizing an operational approach to attain that end state. Conceptual planning corresponds to the art of command and is the focus of the commander with staff support. Detailed planning translates the commander's operational approach into a complete and practical plan. Generally, detailed planning is associated with the science of control including synchronizing forces in time, space, and purpose to accomplish missions. Detailed planning works out the scheduling, coordination, or technical problems involved with moving, sustaining, and synchronizing the actions of the force toward the desired end state.

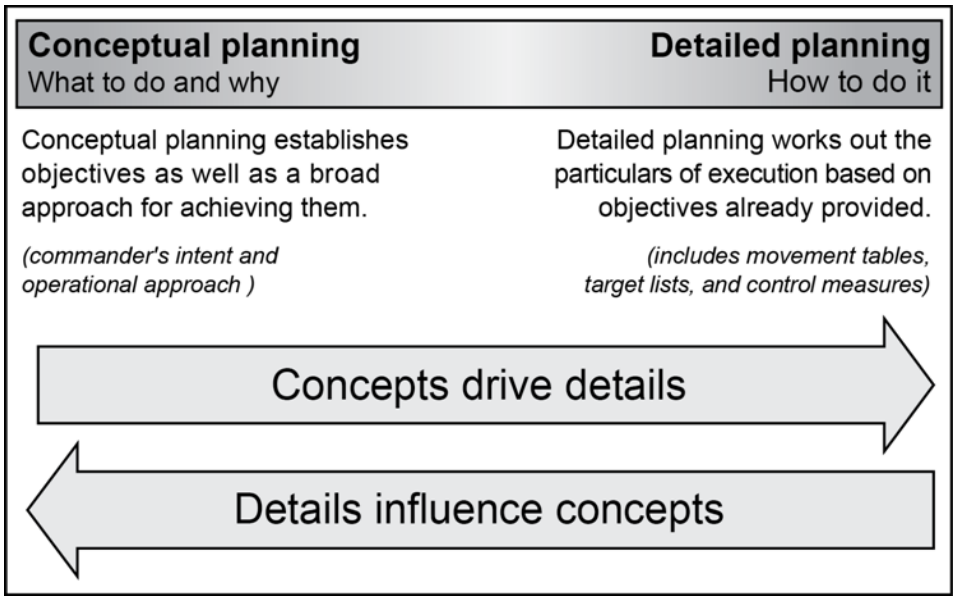


Figure 1-2. Combining conceptual and detailed planning

1-12. Effective planning requires integrating the conceptual and detailed components. As such, Army leaders employ and integrate the following planning methodologies throughout an operation—

- ADM.
- The military decisionmaking process (MDMP). (See FM 6-0.)
- Troop leading procedures. (See FM 6-0.)

1-13. ADM helps commanders and staffs with the conceptual aspects of planning. These aspects include understanding, visualizing, and describing operations. The MDMP helps commanders and staffs translate the commander's vision into an operations plan or operations order that synchronizes the actions of the force in time, space, and purpose to accomplish missions. Small-unit leaders use troop leading procedures as their planning and preparation methodology. (See ADRP 5-0 for a detailed discussion of the fundamentals of planning).

ARMY DESIGN METHODOLOGY

1-14. *Army design methodology* is a methodology for applying critical and creative thinking to understand, visualize, and describe unfamiliar problems and approaches to solving them (ADP 5-0). ADM includes interconnected thinking activities that aid in conceptual planning and decisionmaking. By first framing an operational environment and associated problems, ADM enables commanders and staffs to think about the situation in depth. From this understanding, commanders and staffs develop a more informed approach to solve or manage identified problems. During operations, ADM supports organizational learning through reframing—a maturing of understanding that leads to a new perspective on problems or their resolution.

1-15. There is no one-way or prescribed set of steps to employ ADM. There are, however, several activities associated with ADM including framing an operational environment, framing problems, framing solutions,

and reframing when necessary. The learning from these activities results in a conceptual framework that guides the development of an operations plan or operations order using the MDMP. While planners complete some activities before others, the understanding and learning within one activity may require revisiting the learning from another activity. Thus, ADM is iterative in nature.

FRAMING AN OPERATIONAL ENVIRONMENT

1-16. To understand something—an idea, a statement, an event, or a situation—commanders and staffs need to put that something into context. Establishing context involves discerning the relationships of that something and its surrounding. Commanders initiate ADM by forming a planning team to help them develop a contextual understanding of their operational environment. In framing the operational environment, the team seeks to understand what is going on and why and what the future operational environment should look like.

1-17. Framing an operational environment involves critical and creative thinking by a group to build models that represent the current conditions of the operational environment (current state) and models that represent what the operational environment should look like at the conclusion of an operation (desired end state). The planning team also models the future natural tendency of the operational environment and constructs models of desired future states of other actors as points of comparison with the desired end state. Members of the planning team capture their work in an environmental frame (visual models supported by narratives) that describe and show the relationship among the operational variables including the history, culture, relationships, and future goals of relevant actors for both the current state and future states of an operational environment. (See chapter 3 for a detailed discussion on framing an operational environment.)

FRAMING PROBLEMS

1-18. Identifying and understanding problems is essential to solving problems. As the commander and planning team gain an initial understanding of an operational environment, they shift their efforts to identifying and understanding those issues impeding progress toward achieving the desired end state. Through critical thinking and dialogue, the planning team frames problems by examining the differences between the current state of an operational environment and the desired end state. The also examine the differences between the natural tendency of an operational environment and desired future states of relevant actors with the desired end state. These differences are tensions (frictions, conflicts, and competitions) between relevant actors including geographic, demographic, economic, religious, and resource consumption trends. Combined, these tensions represent a set of interrelated problems (a system of problems) requiring resolution. The planning team captures their work in a problem frame that describes the system of problems in visual models supported by a narrative. (See chapter 4 for a detailed discussion of framing problems.)

FRAMING SOLUTIONS

1-19. With an understanding of the operational environment and associated problems, the commander and planning team consider an operational approach—the broad general actions and means to solve or manage identified problems. The commander and planning team use elements of operational art to visualize and describe the operational approach. In developing the operational approach, the commander and planning team consider resources to support the operational approach and considers associated risk. The team describes the operational approach in a visual model with supporting text. The operational approach forms the basis for the commander's planning guidance used to develop an operations order or operations plan during the MDMP. (See chapter 5 for a detailed discussion of developing an operational approach.)

REFRAMING

1-20. Assessment precedes and guides the other activities (plan, prepare, execute) of the operations process. Assessment involves comparing forecasted outcomes with events to determine the effectiveness of force employment. Assessment helps the commander determine progress towards attaining the desired end state, achieving objectives, and performing tasks. It involves monitoring and evaluating the operational environment to determine what changes affect operations.

1-21. Operations, however, may not proceed as visualized during planning. Commanders reframe after assessing that desired conditions have changed or are unattainable by executing the current plan (including associated branches and sequels). Reframing includes revisiting early hypotheses, conclusions, and the operational approach that underpins the current plan. In reframing, the commander and staff revise their understanding of the operational environment and problem. If required, they develop a new operational approach to overcome the challenges or opportunities that precipitated the need to reframe. (See chapter 6 for a discussion of assessment and reframing.)

KEY CONCEPTS

1-22. ADM is an interdisciplinary approach to planning and problem solving. It combines military theory, writings on the nature of problems, and the challenges of critical and creative thinking. Some of these constructs such as operational art have long been associated with military planning. Other constructs such as systems thinking and framing have recently taken on increased emphasis. Key concepts associated with the ADM include—

- Operational art.
- Critical thinking and creative thinking.
- Collaboration and dialogue.
- Systems thinking.
- Framing.
- Visual modeling.
- Narrative construction.

OPERATIONAL ART

1-23. ADM helps commanders and staffs with the conceptual aspects of planning and applying operational art. *Operational art* is the cognitive approach by commanders and staffs—supported by their skill, knowledge, experience, creativity, and judgment—to develop strategies, campaigns, and operations to organize and employ military forces by integrating ends, ways, and means (JP 3-0). Operational art applies to all levels of war, not just at the operational level. Through operational art, commanders and staffs combine art and science to develop plans and orders that describe how (ways) the force employs its capabilities (means) to achieve the desired end state (ends) while considering risk. This requires commanders to answer the following questions:

- What conditions, when established, constitute the desired end state (ends)?
- How will the force achieve these desired conditions (ways)?
- What sequence of actions helps attain these conditions (ways)?
- What resources are required to accomplish that sequence of actions (means)?
- What risks are associated with that sequence of actions and how can they be mitigated (risks)?

1-24. ADM supports operational art by helping commanders and staffs answer the ends—ways—means—risk questions. During ADM, commanders and their staffs use a set of intellectual tools known as the elements of operational art (see table 1-1 on page 1-6). Commanders and staffs apply these elements to understand an operational environment and problems and to visualize and describe an operational approach. Subsequent chapters discuss elements of operational art as applied to the major activities of the ADM. For example, chapter 3 describes how end state and conditions help frame an operational environment. Chapter 5 describes how center of gravity, decisive points, lines of operations and lines of effort, and phasing help the commander and planning team formulate an operational approach.

Table 1-1. Elements of operational art

• End state and conditions • Center of gravity • Decisive points • Lines of operations and lines of effort • Operational reach • Basing • Tempo • Phasing and transitions • Culmination • Risk

CRITICAL THINKING AND CREATIVE THINKING

1-25. Commanders and staffs apply critical thinking and creative thinking throughout the operations process to help them understand situations, make informed decisions, and direct action. Critical thinking and creative thinking are central to ADM. This section summarizes critical thinking and creative thinking. Proceeding chapters address tools and techniques for improving critical and creative thinking.

Critical Thinking

1-26. Cognition is thinking—it is the mental process of knowing that includes awareness, perception, reasoning, and intuition. Much of our thinking, however, is faulty and biased (prejudiced for or against someone or something). As such, commanders and planners practice critical thinking throughout ADM and the operations process to counter their biases and avoid logic errors.

1-27. Critical thinking is purposeful and reflective thought about what to believe or what to do in response to observations, experience, verbal or written expressions, or arguments. Critical thinking involves questioning information, assumptions, conclusions, and points of view to interpret data and information, evaluate evidence, and clarify goals. Critical thinking helps commanders and staffs understand situations, identify causes of problems, arrive at justifiable conclusions, and make good judgments. Appendix A describes several cognitive biases and logic errors to guard against to improve quality of thought.

1-28. By thinking critically, individuals formulate judgments about whether the information they encounter is true or false, or falls somewhere along a scale of plausibility between true or false. Critical thinking involves considering background knowledge, situational facts, and speculative information. When individuals think critically, they impose structure to ensure rigor and thoroughness. In turn, decisions about what to believe guide individual actions and decisions about what to do. Done well, critical thinking increases the likelihood that actions achieve their desired purposes.

Creative Thinking

1-29. Creative thinking examines problems from a fresh perspective to develop innovative solutions. Creative thinking creates new and useful ideas, and reevaluates or combines old ideas, to solve problems. Leaders face unfamiliar or ill-structured problems that require new or original approaches to solve them. This requires creativity and a willingness to accept change, newness, and a flexible outlook of new ideas and possibilities.

1-30. Breaking old habits of thought, questioning the status quo, visualizing a better future, and devising responses to problems requires creative thinking. Leaders face problems unfamiliar or old problems under new conditions. In these situations, leaders apply creative thinking to gain new insights, novel approaches, fresh perspectives, and new ways of understanding and conceiving things.

COLLABORATION AND DIALOGUE

1-31. ADM is a team-based approach to understand, visualize, and describe operations. It includes considering diverse perspectives through collaboration and dialogue. Collaboration and dialogue help develop shared understanding between the commander and staff and externally with other commanders and unified action partners.

1-32. Collaboration is two or more people or organizations working together toward common goals by sharing knowledge and building consensus. Dialogue is a way to collaborate that involves the candid exchange of ideas or opinions among participants and encourages frank discussions in areas of disagreement. Throughout the operations process, commanders, subordinate commanders, staffs, and unified action partners collaborate and dialogue, sharing and questioning information, perceptions, and ideas to understand situations and make decisions.

1-33. Through collaboration and dialogue, the commander creates a learning environment by allowing participants to think critically and creatively and share their ideas, opinions, and recommendations without fear of retribution. Effective dialogue requires candor and a free, yet mutually respectful, competition of ideas. Participants must feel free to make viewpoints based on their expertise, experience, and insight; this includes sharing ideas that contradict the opinions held by those of higher rank. Successful commanders listen to novel ideas and counterarguments concerning any problem.

1-34. Dialogue is the catalyst that drives planning teams to develop new ways of thinking about problems and identify innovative solutions. Effective dialogue ensures team members may question one another about ideas, discuss alternatives, and refine the team's thinking. When done well, dialogue helps:

- Reveal assumptions that underlie an argument or concept and reveal individual biases. It also reveals what members are not thinking about the situation.
- Display diversity of ideas and expose a range of viewpoints.
- Explore concepts from different perspectives.
- Reveal areas where the team lacks diversity or experience and where external subject matter experts are valuable.
- Develop shared mental models—individual beliefs about cause-effect relationships, assumptions and biases about how the world works—concerning problems and solutions.
- Build trust in the team and the planning effort.

1-35. During ADM, and throughout the operations process, the commander promotes and encourages collaboration and dialogue. Effective collaboration and dialogue are not possible unless the commander ensures it. Commanders establish a culture of collaboration and dialogue in the organization. They recognize that they do not know everything, can be wrong, and recognize that they have something to learn from even the most junior Soldier. Throughout the operations process, commanders demonstrate humility to learn and understand from others to make better decisions. Commanders establish a command climate where collaboration and dialogue routinely occur throughout the organization through personal example, coaching, and mentorship.

SYSTEMS THINKING

1-36. A system is a group of interacting, interrelated, and interdependent components or subsystems that form a complex and unified whole. Systems have a purpose with their parts arranged in a way (structure) to carry out their purpose. Understanding why a system exists, how the parts of the system serve that purpose, and appreciating how that system interacts with its broader environment helps develop ways to change that system.

1-37. Systems thinking is a process of understanding how parts of a system work and influence each other as part of a greater whole. It is an approach to problem solving that views problems as part of the greater system and that these problems are interrelated. By understanding components and problems in a system in relation with each other (as opposed to in isolation), problem solvers are better equipped to develop a holistic approach to solving or managing identified problems.

1-38. In applying systems thinking, commanders and the planning team view an operational environment as a system. The team reflects on how components of the system relate to each other from an internal perspective to understand the system's purpose, structure, and processes (internal logic). The team also seeks to understand how a system interacts with, and is influenced by, its surrounding environment (including other systems) as shown in figure 1-3 on page 1-8. In doing so, system thinking helps participants understand how a system receives inputs, adapts to those inputs according to its internal logic, and provides outputs to the surrounding environment.

1-39. The team also thinks about problems in an operational environment as part of the system. As the commander and staff learn about the operational environment, they start to identify a host of issues and tensions in the system. These problems are often interrelated and change over time. As such, commanders and staff think about these problems as a system of problems, as opposed to a single problem.

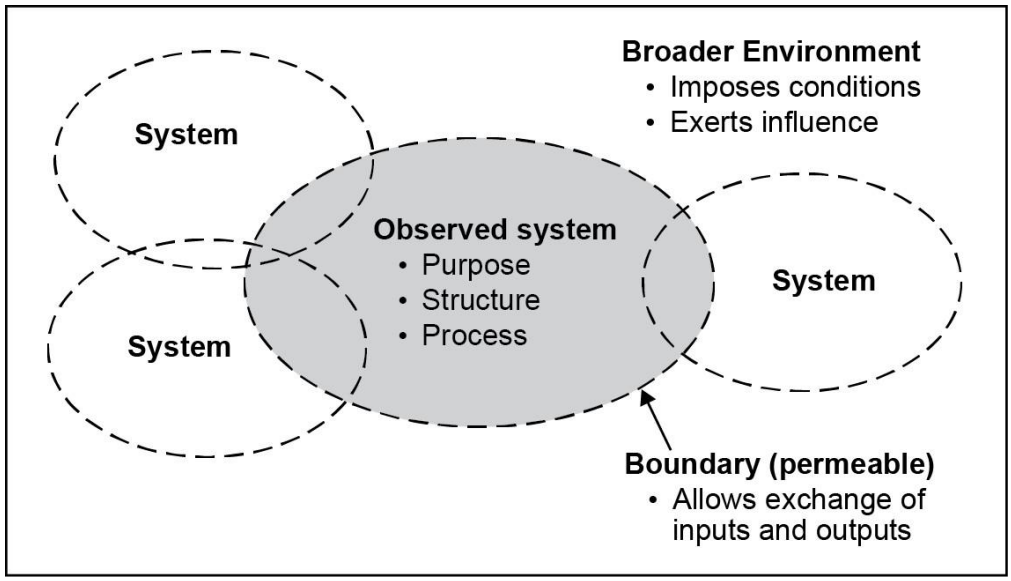


Figure 1-3. Systems thinking

1-40. Systems thinking helps planners break away from linear cause-effect and compartmentalized ways of addressing problems (such as considering components of a problem set in isolation). When teams adopt a system-level view, members see subtleties, indirect influences, and interactive effects important to understanding the complexity of problems and anticipating second and third order effects of possible actions.

1-41. A systems thinking approach is also useful during execution as commanders and staffs assess changes in their operational environment and the progress of operations. For example, military, economic, political, and social systems are not static but adapt based on inputs. Collecting feedback from actions through assessment helps the commander reinforce successful action while altering actions not leading to intended results. Examining events and studying patterns and trends in a system among systems enable the command to develop actions to create desired change with an operational environment.

FRAMING

1-42. In the context of ADM, framing is about building conceptual models of reality. When framing, planners use systems thinking to select, organize, interpret, and make sense of situations and problems by establishing context—the set of circumstances that surround a particular event or situation. ADM involves framing operational environments, problems, and solutions to problems through dialogue and critical thinking by a group. When framing an operational environment, the planning team considers the perspectives and worldviews of others to understand the situation. This contextual understanding of an operational environment is a frame of reference to understand problems, develop solutions, and act.

1-43. Constructing systems models helps planners integrate the pieces of information to make sense of a situation. This leads to a deeper understanding of an operational environment and problems requiring resolution. The usefulness of models increases as they become explicit and commonly understood. Building

explicit conceptual models of the situation and associated problems promotes understanding among stakeholders. It is important to note that framing results in models based on current information. These models may or may not approximate reality. As the commander and staff learn more about the situation or if the situation changes significantly over time, commanders and staffs adjust their models and reframe as required.

VISUAL MODELING

1-44. ADM relies heavily on forming and presenting ideas in narrative and visual form. Visual information is stimulating; therefore, visual models enhance critical and creative thinking. A visual model, based on logical inference from evidence, helps creative thought develop into understanding. A diagram or sketch points to hidden relationships not considered through conversation alone. In addition, showing periodic summaries of work helps individuals see the results under consideration. This identifies new ways of thinking and possible areas for further examination. In other words, seeing something drawn may help individuals think through challenging problems, especially when examining abstract concepts. Graphic modeling techniques available to the team include:

- Rich picture diagrams that use symbols and sketches that graphically tell the story of a situation.
- Influence diagrams that use symbols and words to show relationships among variables in a system.
- Mind-maps that use symbols and words to show relationships to an idea or a thing.
- Causal loop diagrams that use symbols and words to show reinforcing and balancing loops among actors and things to show cause and effect between variables.

1-45. In addition, planning teams consider and use the capabilities of their unit's geospatial intelligence teams. These teams help develop visual models that overlay a range of information on maps including terrain and weather, infrastructure, and cultural demographics.

1-46. Throughout ADM, team members develop drawings and sketches of operational environments, problems, and approaches to solve those problems. These initial sketches are called working diagrams. The group uses these to create a common understanding in the group. These sketches evolve into presentation diagrams the planning team uses to present understanding to members outside their group. An effective presentation diagram uses commonly understood doctrinal terms and graphics. It is helpful to have personnel not involved in ADM review presentation diagrams to gauge the effectiveness of the diagrams to increase understanding.

NARRATIVE CONSTRUCTION

1-47. A narrative is a story that gives meaning to individuals, objects, and events. Individuals, groups, organizations, and countries all have narratives with many components that reflect and reveal how they define themselves. Political parties, social organizations, and government institutions, for example, have stories bound chronologically and spatially. They incorporate symbols, historical events, and artifacts tied together with a logic that explains their reason for being.

1-48. Developing narratives is essential to ADM. Narrating is the production of a story–an explanation of an event or phenomenon by proposing a question or questions that relate to the artifacts themselves. These questions include:

- What is the meaning of what I see?
- Where does the situation begin and end?
- What happened, is happening, and why?
- What information is missing?

1-49. Commanders, staffs, and unified action partners create a narrative to help understand and explain an operational environment, problems in an operational environment, and solutions. Not only is the narrative useful to communicate to others, the act of constructing the narrative itself is a key learning event for the command.

1-50. When developing a narrative, the team must be cautious of a common pitfall known as "narrative fallacy." The narrative fallacy is a tendency of individuals to create a plausible narrative given only a small

amount of information. Often, the fewer facts known about a situation, the easier it is to create a narrative, and individuals have greater confidence in the accuracy of that narrative. To avoid the narrative fallacy, it is important that the planning team studies and researches the situation in depth before engaging in narrative construction. (See source note 1.)

Chapter 2

Getting Started

This chapter addresses preparing for Army design methodology (ADM). It begins with a discussion of when to employ ADM followed by a discussion of commander involvement. The chapter then offers considerations to form and lead a planning team. The chapter concludes with discussions on sharing the workload and resources commonly used when performing ADM.

WHEN TO EMPLOY ARMY DESIGN METHODOLOGY

2-1. Planning begins upon receipt of or in anticipation of a mission. The purpose of this step is to alert all participants of the pending planning requirements, determine how much available time for planning and preparation, and decide on a planning approach. An important consideration for commanders upon receipt or anticipation of a mission is how best to integrate the conceptual and detailed components of planning (see Chapter 1). Depending on the situation, commanders employ ADM before, in parallel with, or after the military decisionmaking process (MDMP).

2-2. Commanders need to recognize the triggers, cues, and characteristics of the situation that indicate when to apply ADM. In some cases, the operation's end state may be unclear. In other cases, it is a sense of surprise, uncertainty, or confusion that triggers a need for a deeper understanding of the situation. During execution, commanders may decide to employ ADM after realizing that actions are not achieving expected results or have unanticipated second- and third-order effects. Below are some questions commanders consider when assessing whether ADM is appropriate.

- Is there enough information about the situation to move forward?
- Are problems and solutions self-evident?
- Is there a clear desired end state?
- Is a course of action evident?
- Are the known unknowns significant enough to distort detailed planning?
- Are means (resources and force structure) undetermined?
- Are there unexpected and/or surprising effects to actions?
- Are actions falling short of achieving the desired impact?

2-3. When problems are hard to identify or the operation's end state is unclear, commanders may initiate ADM before the headquarters engages in detailed planning. This is often the case when developing long-range plans or orders for an operation or a new phase of an operation. When using this approach, a complete evolution of ADM is employed with the resulting products (environmental frame, problem frame, and operational approach), informing the development of a plan or order using the MDMP. This approach is time consuming but provides the greatest understanding of an operational environment and associated problems resulting in effective planning products and orders.

2-4. Commanders may also perform ADM with the MDMP. This technique allows both planning efforts to inform each other. In this instance, the commander forms separate planning teams. One team performs ADM while the other team leads the staff through the mission analysis step of the MDMP. Results from both ADM and mission analysis inform the efforts of each team and help the commander develop the initial commander's intent and planning guidance. The two planning teams then merge and continue with the remaining steps of the MDMP. Smaller headquarters, such as brigades and battalions, may not have enough personnel to execute this approach.

2-5. Another option is to embed aspects of ADM in the mission analysis step of the MDMP, especially when time available for planning is compressed. In this case, the staff initially focuses on the intelligence

preparation of the battlefield (IPB) steps of "define the operational environment" and "describe the effects of the operational environment". Based on this initial IPB, the commander and staff perform a planning session or sessions to understand the operational environment and problems. The staff continues with mission analysis and shares their results with the commander. See ATP 2-01.3 for a detailed discussion of IPB.

2-6. Sometimes planning time is limited as in crisis action planning. In this case, the commander and staff perform the MDMP in a time-constrained environment to produce an operations order to accomplish the mission (see FM 6-0 for abbreviating the MDMP). As planning time becomes available during execution, commanders initiate ADM to reframe their understanding of the operational environment and associated problems and modify the plan as required.

2-7. Figure 2-1 shows a balance of conceptual and detailed planning efforts throughout an operation to illustrate the relationship of ADM and the MDMP. In this example, the balance of activities is initially on conceptual planning. The commander and planning team frame the operational environment and associated problems and develop an operational approach. The planning emphasis shifts to more detailed planning using the MDMP after the commander issues the initial commander's intent and planning guidance based on their understanding and visualization developed during ADM.

2-8. During the MDMP, the commander and staff refine their understanding and develop, compare, and decide on a course of action and produce an operations order. During execution, the plan is refined based on the continuous assessment of the operational environment and of the progress of the operation. If the current operational approach is not leading to the intended results, if aspects of the operational environment or problems change significantly, or if the operation meets with unexpected success, the commander may decide to reframe. As such, the balance of activities shifts back to conceptual planning as shown on the right side of figure 2-1.

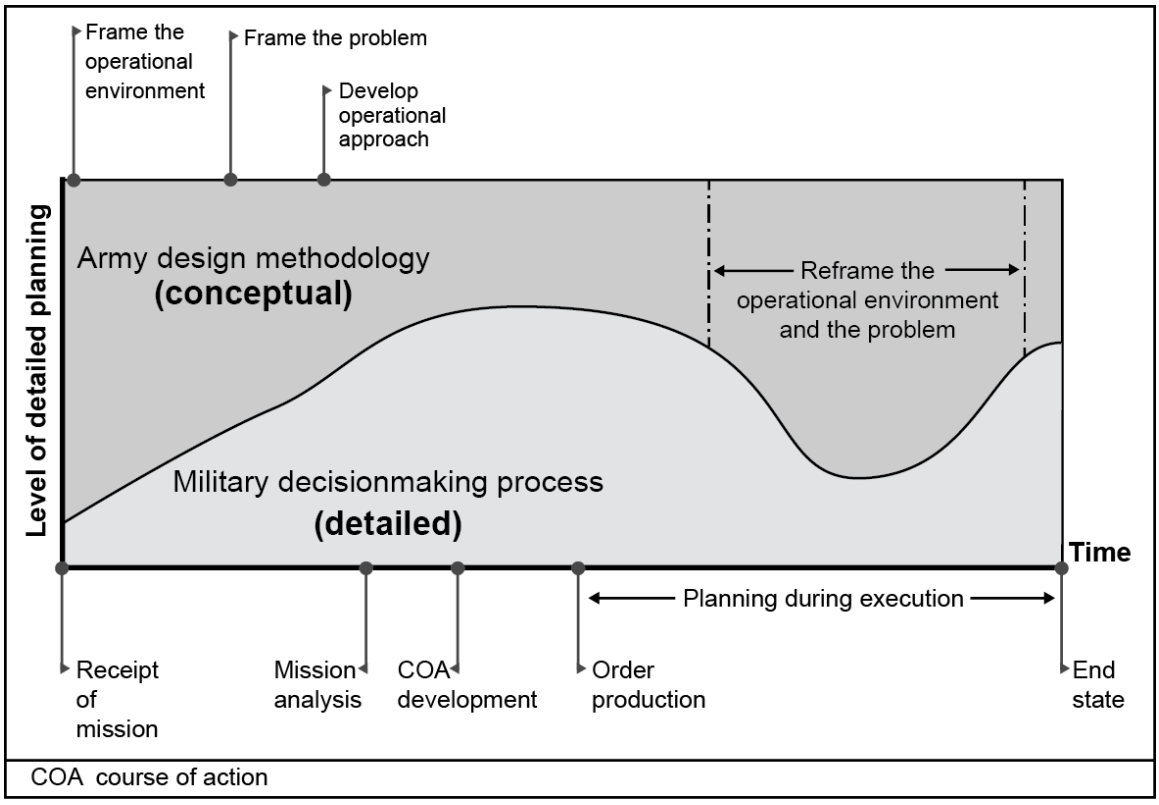


Figure 2-1. Integrated planning

COMMANDER INVOLVEMENT

2-9. Commanders are the most important participants in the operations process. They drive operations through understanding, visualizing, describing, directing, leading, and assessing operations as shown in figure 2-2. All of these commander activities occur during planning, preparation, execution, and assessment but take on different emphasis throughout operations. For example, commanders focus their activities on understanding, visualizing, and describing during planning. During execution, commanders focus on directing, leading, and assessing while improving understanding and modifying visualization.

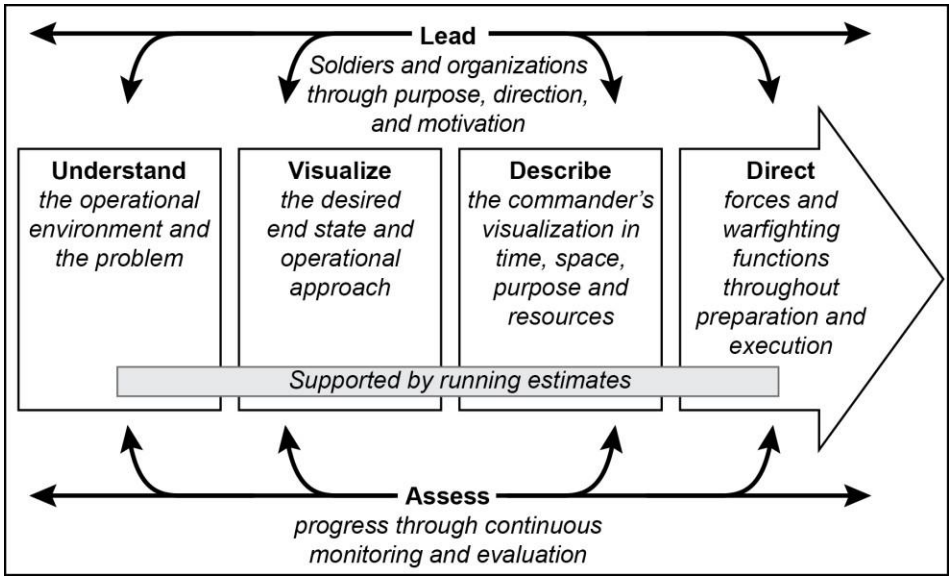


Figure 2-2. The commander's role in the operations process

2-10. Commanders are an integral to any ADM effort. Working with their staffs, other commanders, and unified action partners, commanders employ ADM to understand the operational environment and associated problems, visualize the desired end state and operational approach, and to describe that visualization in time, space, purpose, and recourses.

2-11. While commander's involvement is central to successful ADM, the responsibilities and demands on a commander's time prevent continuous involvement in ADM. Before embarking on ADM, commanders consider how to manage their own level of involvement and the benefits and risks associated with varying levels of participation. There are the two primary techniques that reflect varying levels of commander involvement:

- The commander leads the team and facilitates the dialogue.
- The commander comes in and out of the activities of ADM and is involved periodically at various points throughout the effort.

2-12. It is important to recognize the risks of both limited commander involvement and too much involvement in ADM. Limited commander involvement poses a risk that the potential benefits of ADM are unrealized and outcomes have limited impact. Commanders not engaged in the process find it difficult to understand the logic behind the understanding developed during ADM. Too much involvement from the commander poses risk to effective ADM. An important issue to recognize is the influence commanders have over their staff. The commander has the potential to dampen dialogue by providing too many ideas and interpretations upfront. To help determine their degree of involvement in ADM, commanders consider the following questions:

- How much time can they devote to the planning effort?
- If they cannot be involved in all aspects, what are the critical parts they want to be involved in? Where can they have the greatest impact?
- If they cannot be involved in all aspects, how do they want the team to communicate their logic and insights? How frequently does the commander need updates and in what format?

2-13. Because of the competing demands on the commander's time, planning team leaders are selective on engaging the commander throughout ADM. Team leaders work with the chief of staff or executive officer to get time on the unit battle rhythm with the commander. If the commander is fully engaged in an ADM effort, an off-site with subordinate commanders and the planning team is an option. Scheduling periodic design sessions (daily, every other day, weekly) is another option. Not all design sessions with the commander are formal or structured. A design session with the commander, key leaders, and planners over dinner is an example.

FORMING THE PLANNING TEAM

2-14. In a headquarters, the plans cell performs numerous planning tasks simultaneously. A technique for organizing the workload is to form planning teams for requirements. A planning team consists of a lead planner [normally from the G-5 (S-5), plans or G-3 (S-3), operations], functional planners (e.g. fires, protection, sustainment), and other subject matter experts as required. Commanders form a planning team (sometimes referred to as a design team) to perform ADM. This team leverages multiple, diverse perspectives and knowledge to help the commander understand an operational environment and problems, and develop an operational approach to solve those problems.

2-15. Some higher Army headquarters commanders form a semipermanent staff section called a commander's initiatives group. Commander's initiative groups produce focused, professional studies, projects, and products at the direction of the commander. For those units that create a commander's initiatives group, this group is another option to become the base for forming a planning team for ADM. However, unless members of the commander's initiative group continue to participate in the planning effort through orders production, there is some risk to this option. Since the results of ADM—deeper and broader understanding of the operational environment and problems—are best understood by those participating in ADM, some of this understanding may be lost during translation if commander initiative group members are not involved in the MDMP.

2-16. Teams offer advantages over individual's endeavors. The interaction of personalities can lead to a set of team dynamics that require attention and energy to manage for a quality outcome. Selecting the right individuals to serve on the planning team is important to successful ADM. The following are some considerations when forming the planning team:

- Skills and characteristics of potential team members.
- Diversity of team members.
- Size of the team.
- Roles in the team.

SKILLS AND CHARACTERISTICS OF POTENTIAL TEAM MEMBERS

2-17. A key aspect of assembling the team is considering the knowledge, skills, abilities, work styles, and personality characteristics needed for the team's tasks. Commanders consider the scope of the problem and personnel resources when forming a planning team. While individuals are often selected to the team based on their expertise associated to the problem (for example functional or regional knowledge), individuals should also possess the following characteristics:

- Having an open mind for new ideas.
- Having an inquisitive mindset; being curious, and eager for knowledge.
- Being comfortable with ambiguity.
- Possessing critical thinking and creative thinking skills.
- Being willing to listen to others and valuing differing points of view.
- Being able to take and offer different perspectives.
- Possessing an investigative mindset and research skills.
- Able to communicate complex ideas in simple words.
- Not afraid of having own ideas critiqued by others.

- Able to think visually and effectively use visual graphics.
- Having training in ADM and the philosophy and theory that underpin it.

DIVERSITY OF TEAM MEMBERS

2-18. + Commanders and team leaders strive for variety of skill sets, knowledge levels, and personalities among individuals when forming the planning team. Planning teams comprised of people with widely varying backgrounds and experiences have more perspectives to draw on for their work. Teams that are more diverse can be more creative, engage in higher quality dialogue, and develop more innovative solutions. Commanders and team leaders assemble a team with a rich mix of:

- Education level, training, credentials and qualifications.
- Rank.
- Assignments, deployment, and career history.
- Functional areas of expertise (such as planner, intelligence, logistics, special operations).
- Sex.
- Personality characteristics.
- Thinking styles and preferences (for example, big picture thinkers, detailed thinkers, abstract thinkers, historical thinkers, or those who think about the future).

2-19. Commanders and team leaders recognize the advantages and disadvantages associated with team member diversity. For example, diverse teams have a wider range of perspectives on which to draw, but may experience more interpersonal conflict and higher coordination needs. For teams with diverse rank, team leaders spend time encouraging junior members to speak their mind and challenge ideas of those of senior rank if they disagree with an idea.

SIZE OF THE TEAM

2-20. Team size is an additional consideration when forming the team. Determining the size of the team requires a fine balance between a team big enough to provide diversity of perspective but small enough to be productive. A core team of six to nine people, with other subject matter experts participating as needed, is an effective size. Larger teams manage their work by dividing into smaller subteams to complete tasks (for example research) then come together to dialogue their findings.

2-21. The optimal team composition depends on the nature of problems facing the command and gaps in knowledge attributed to those problems. In many cases, it is not fully apparent on the required areas of expertise needed on the planning team. It may only be after engaging in framing an operational environment that the commander and planning team recognize the needs for a particular area of expertise.

ROLES IN THE TEAM

2-22. As the team forms, commanders and team leaders consider the roles of each team member. Roles assigned to team members may include but are not limited to:

- Team leader.
- Subject matter experts.
- Red team members.
- Note takers.
- Graphic artist.

Team Leader

2-23. The team leader is an active facilitator of the team and methodology. Team leaders are experienced with performing the activities of ADM and skilled in leading group work among peers, subordinates, and superiors. Team leaders create an environment of learning among team members by encouraging wide participation amongst all members of the team, and avoid over relying on any individual. Team leaders engage individuals on the team to think creatively while monitoring and orchestrating the inquiry. The team

leader controls the planning timeline and oversees the quality of resulting products. Team leader duties include:

- Working with the commander to define the team's purpose, establishing goals, and setting expectations.
- Working with the commander to set the tone for open and honest discourse.
- Building and maintaining interpersonal trust and a sense of team cohesion.
- Managing personalities and associated team dynamics.
- Minimizing unproductive (interpersonal) conflict.
- Organizing the work of the team.
- Managing the team's work pace and workflow.
- Encouraging and guiding team members to exchange, discuss, and integrate information.
- Helping the team avoid quick opinions that match the group consensus (i.e., groupthink) rather than evaluating information.
- Maintaining awareness of the organizational context where the team is working, including the commander's and other stakeholders' needs and preferences.

Subject Matter Experts

2-24. Various subject matter experts help form the team. Routinely, members of the team engaging in ADM are internal to the headquarters. This includes members of the G-2 (S-2), Intelligence and G-9 (S-9), Civil Affairs staff sections. Not only do these individuals have expertise in their fields, they can access the analytical and research capabilities of their respective staff sections.

2-25. As the team learns more about the situation, they recognize what they do not know. Areas and topics under consideration require individuals from outside the existing staff who have different perspectives and/or specialized knowledge and expertise. Examples include human terrain teams, political advisors, economic advisors, and historians. Request for subject matter expert support ranges from requesting individuals are present in the headquarters or reaching back via teleconference, video teleconference, and e-mail. Reception and orientation of new members to the team is vital to their integration into the core group.

Red Team Members

2-26. Red team qualified individuals are part of the commander's staff at division through theater army and augment brigade headquarters as required. Trained and educated to think critically and creatively, red team members help commanders and staffs think from different perspectives. They help commanders and staffs explore alternatives in plans and orders and see things from the perspective of others. Red team members help:

- Broaden the understanding of the operational environment.
- Identify problems and clarifying end state conditions.
- Challenge assumptions.
- Ensure the perspectives of the enemies, adversaries, and others are considered.
- Identify friendly and enemy vulnerabilities and opportunities.
- Identify areas for assessment.
- Anticipate cultural perceptions of partners, adversaries, and others.

2-27. Commanders and chiefs of staff (executive officers) consider how to use their red teams when forming the planning team. One technique is to form a red team to critically review and provide an alternative perspective of products developed by the planning team. Another technique is for a red team qualified individual to serve on the planning team as facilitator. In this role, the red team member helps the planning team leader encourage constructive dialogue between group members and maintain order of the group discussion to protect member's ideas and manage time. Another technique is forming a red team to work on a portion of ADM and compare their work with that of the planning team. For example, red team members frame an operational environment from the perspective of the population.

Note Takers

2-28. As the team works together, the team's knowledge base expands and their understanding of the various problems deepens and evolves. A consideration for planning and problem solving teams throughout the process is how to document the knowledge, the evolving logic, and the insights that emerge during the team's work.

2-29. In part, dealing with knowledge capture is a resource issue. The team lead considers how much time the team spends thinking and talking and how much time the team spends documenting thoughts and discussion. While it is important that all members of the team keep diligent notes, it is helpful to assign a dedicated note taker.

2-30. ADM relies on collaboration and dialogue among members on the team and with individuals outside of the team. The team captures key points in these discussions as the team moves through the activities of ADM. The note taker records collaborative work sessions. Key information recorded includes assumptions, reasoning or logic behind statements, areas of disagreement and commander's guidance. If resources allow, bringing in someone from outside the team helps free all team members to participate in the session.

Graphic Artist

2-31. Visual modeling or sketching is another key aspect of ADM (see chapter 1). Thinking visually is a skill that not all members of the team can do well. It is important for team leaders to seek out members in the team that are good visual thinkers and graphic artists. These visual thinkers capture team thought and develop clear visual models for presentation to others outside the group.

LEADING THE TEAM

2-32. A significant challenge for team leaders and commanders is establishing a collaborative and trusting environment where team members feel safe discussing, questioning, thinking creatively, and sharing ideas openly. Team leaders encourage members to openly question and debate ideas with those who are higher in rank. These behaviors may seem high-risk, uncomfortable, and inappropriate to those who are accustomed to deferring to higher-ranking personnel in a hierarchical command structure.

2-33. Another challenge is a tendency of individuals to label ideas either "good" or "bad," "right" or "wrong." Individuals can tie their identity to the ideas they create and the esteem they get from being told they are right. As a result, members of a planning team refrain from thinking creatively or putting forth alternative ideas out of concern of being wrong or fear of being judged negatively by others.

2-34. The commander and team leader work to overcome these challenges. Despite rank, service, agency, or the background of team members, the commander and team leader create an atmosphere where members share ideas, think critically, question assumptions, and challenge ideas without fear. Senior leaders are aware of how they respond to others' ideas and critiques. The commander and team leader reinforce the view that an attack on an idea is not an attack on the person and that the debate is to develop a deeper understanding. Creating a positive climate requires leadership that emphasizes and encourages continual learning, creative and novel thought, and positively recognizes those who test ideas.

2-35. The team leader also plays a key role in activities external to the team. The planning team does not exist in a vacuum; rather the team exists in a particular organizational context that has a specific culture and set of norms for interacting and performing business. The team has a "customer"—typically the commander, in addition to other senior leaders and external organizations—who have needs and an interest in what the team learns and produces. A team leader is aware of the organizational context where the team functions and the team's role in that context.

SHARING THE WORKLOAD

2-36. While ADM involves group work, the whole group does not work on all aspects of ADM. Leaders assign some work to subteams or to individuals. Large group work is optimal for shared understandings. While slow at times, it is important that the entire planning team share their understanding and exchange ideas. Small group work is effective when the large group has too many issues to sort through or the expertise

of all members of the group are not needed for a particular inquiry or activity. Individual work is useful when performing detailed research on a topic. The team leader remembers that the work of small groups or work done by individuals is subject to criticism by those not present. Small group and individuals vet their work with the larger group. This provides a chance for all to comment, but also shares understanding among the team.

RESOURCES

2-37. One area to consider when preparing for ADM is the types of resources the activity requires. Resource considerations include physical space for the team to work and materials needed for communicating and representing ideas.

2-38. Graphical depiction is a key element of ADM. It allows the team to visualize concepts and show relationships and interdependencies. The ability to share information across the team and to manipulate and structure information in different ways is fundamental to ADM. It is helpful to have a workspace dedicated to the ADM effort where the team leaves drawings and other products displayed throughout the ADM effort. The room has ample wall space for posting work products. It is large enough to enable small group work if the team determines it is beneficial to have smaller breakout groups working on particular aspects of the problem set.

2-39. Team leaders organize workspace to facilitate group discussion and collaboration. A room or area where individuals see and hear each other and view the various visual products is ideal. When bringing the group together to work on an activity, positioning members in a circle or oval facilitates effective dialogue among members as shown in figure 2-3.

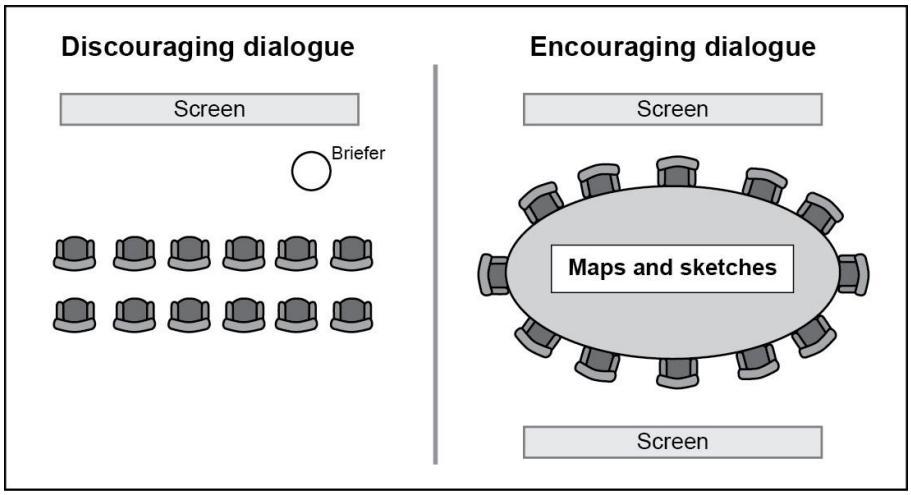


Figure 2-3. Workspace setup

Note: This picture of a typical briefing room arrangement on the left side of figure 2-3 discourages dialogue. Team members in the front cannot see those in the back, and those in the back have difficulty participating. The right side of figure 2-3 represents a collaborative setting that promotes dialogue. In this setup, everyone sees and interacts with each other, including observing physical reactions and facial expressions. Everyone has an equal place at the table and that signifies everyone's contribution is equally important.

2-40. The team shares and displays information, so it is necessary that the team access materials such as whiteboards and butcherblock paper for drawing, structuring, and displaying information. Materials for consideration include:

- Maps and overlays.
- Whiteboards and butcher block paper.
- Markers and other drawing tools.

- Post-it notes of varying sizes and colors.
- Notepads and sketch paper.
- Laptop computer.
- Video teleconferencing capability.
- Projector.
- Audio recorder.
- Camera.
- Command post of the future and other information systems.

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Chapter 3

Framing Operational Environments

This chapter begins with a description of an operational environment from a general perspective. Next, this chapter offers an approach for framing an operational environment. The chapter concludes with several techniques commanders and staffs use to understand the current state of an operational environment and to visualize a desired end state.

OPERATIONAL ENVIRONMENT

3-1. An *operational environment* is a composite of the conditions, circumstances, and influences that affect the employment of capabilities and bear on the decisions of the commander (JP 3-0). An operational environment includes physical areas (air, land, maritime, and space domains) and cyberspace. It also includes the information that shapes conditions in those areas and enemy, friendly, and neutral aspects relevant to operations. An operational environment is not isolated or independent but interconnected by various influences (for example, information and economics) from around the globe. No two operational environments are the same.

3-2. Whether designed to relieve suffering from a natural disaster or to defeat a large enemy force, military operations occur in complex and ever changing operational environments. Complexity describes situations with many parts and subparts (structural complexity) and the numerous relationships and resulting behaviors among those parts and subparts (interactive complexity). While aspects of an operational environment are less complex than other aspects, an operational environment as a whole is both structurally and interactively complex.

3-3. In addition, an operational environment is not static but evolves and redefines itself in potentially unpredictable ways. This evolution results from humans interacting in an operational environment and from their ability to learn and adapt. The operational environment changes as people and organizations take action in an operational environment. Some of these changes are anticipated while others are not. Some changes are immediate and apparent while other changes are delayed or hidden. The complex and dynamic nature of an operational environment makes determining the relationship between cause and effect difficult and contributes to the uncertainty of military operations.

3-4. Commanders and staffs employ systems thinking (see chapter 1) and use the operational variables to help understand, visualize, and describe an operational environment. Operational variables are those aspects of an operational environment, both military and nonmilitary, that differ from one operational area to another and affect operations. Operational variables describe not only the military aspects of an operational environment but also the population's influence on it. The eight interrelated operational variables are political, military, economic, social, information, infrastructure, physical environment, and time (PMESII-PT). The operational variables are broad information categories that help the commander analyze and develop a comprehensive understanding of an operational environment. The operational variables are information categories used to describe an operational environment. (See ADRP 5-0 for a more detailed description of the operational variables and a listing of associated subvariables).

FRAMING ACTIVITIES

3-5. Military operation occurs in a context larger than a unit's mission. As such, the staff supports commanders in developing a contextual understanding of an operational environment through framing—the act of constructing models that seek to describe reality. Framing involves selecting, organizing, interpreting, and making sense of interrelated variables and relevant actors in an operational environment. When framing

an operational environment, the commander and planning team understand the current state and visualize a desired future state of an operational environment as shown in figure 3-1.

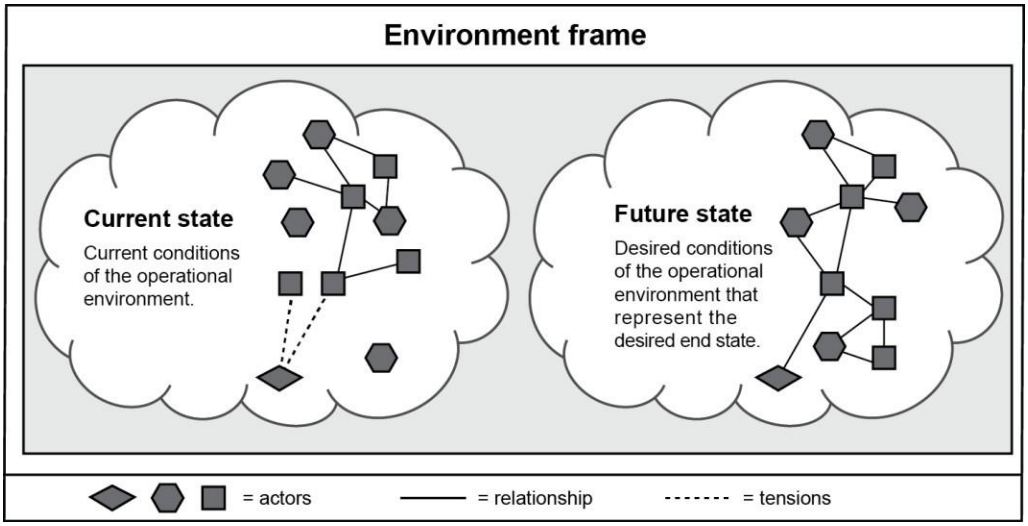


Figure 3-1. Framing an operational environment

3-6. Understanding current conditions and desired future conditions of an operational environment helps commanders identify problems and develop approaches to solve or manage those problems. When framing an operational environment, the commander and planning team answers questions such as:

- What is going on in an operational environment?
- Why has this situation developed?
- Who are the relevant actors?
- What is causing conflict among relevant actors?
- What are the strengths and weaknesses of the relevant actors?
- Why is the situation (or the projected future situation) undesirable?
- What is the direction and guidance of higher authorities pertaining to the situation?
- What future conditions need to exist for success?

3-7. A product of framing an operational environment is an environmental frame. The environmental frame describes and depicts the context of the operational environment—how the context developed (historical and cultural perspective), how the context currently exists (current conditions), and how the context could trend in the future (projected future conditions). The environmental frame also includes a description of what the operational environment should look like at the conclusion of an operation (desired end state conditions).

Note: As the planning team frames an operational environment, they will identify problems and think about ways to solve those problems. The team should record these ideas and addresses them in more detail during problem framing (see chapter 4).

3-8. There is no "one- way" or set of steps for framing an operational environment. There are, however, several activities that help the commander and staff develop an environmental frame including:

- Understand higher guidance and direction.
- Understand the current state of an operational environment.
- Project how an operational environment may trend in the future.
- Discern desired future states of other actors.
- Envision a desired end state.

UNDERSTAND HIGHER GUIDANCE AND DIRECTION

3-9. Framing an operational environment involves understanding higher guidance and appreciating how higher authorities view the current state and future state of an operational environment. Army forces operate within the context of a higher headquarters; whether that being a higher Army headquarters or a higher joint force headquarters. As such, it is essential the commander and staff understand how their higher headquarters perceives the operational environment, problems, and operational approach.

3-10. To understand higher guidance and direction, the planning team reviews relevant orders, directives, policy documents, written and oral guidance, and estimates of their higher and next higher headquarters. They study strategic guidance and directives, international mandates, and other products that influence their operational environment. As the commander and planning team frame their own operational environment, they may see their operational environment, problems, and approaches to solve those problems differently than higher headquarters. Commanders question contradictory or ambiguous guidance and directives. Dialogue up and down the echelons and with unified action partners help work out these differences and help build shared understanding throughout the planning effort.

UNDERSTAND THE CURRENT STATE OF AN OPERATIONAL ENVIRONMENT

3-11. To envision an operational approach to solve problems, the commander and planning team understand those conditions that make up the current state of an operational environment. A condition is a state of something essential in an operational environment. An example is a three-year drought in an area. Insurgent control of a certain province is another example. Not only does the team identify current conditions, they understand how those conditions came to be from a historical and cultural perspective.

3-12. One way to develop an understanding of an operational environment is from a systems perspective (see chapter 1). To develop this systems perspective, the planning team identifies and discerns the relationships among relevant variables and actors in an operational environment. An actor is an individual or group in a social network who acts to advance personal interests. Relevant actors include individuals, enemy forces, states and governments, coalitions, terrorist networks, and criminal organizations. They also include multinational corporations, nongovernmental organizations, and others able to influence the situation. Once identified, further research and analysis by the team helps clarify the roles and functions of each actor and how they relate to other actors and the other variables in an operational environment. (See appendix B for an example of using a systems approach in framing an operational environment.)

3-13. Building a diagram illustrating relevant actor functions, relationships, and tensions helps the commander and staff to understand an operational environment. Often relationships among actors have many facets, and these relationships differ depending on the scale of interaction and temporal aspects (history, duration, type, and frequency). Clarifying the relationships among actors requires intense effort since these relationships require examination from multiple perspectives.

3-14. Figure 3-2 on page 3-4 is an influence diagram followed by a supporting narrative. This example is a presentation diagram. The purpose of a presentation diagram is to convey the main ideas to individuals outside of the planning team. Detailed supporting diagrams, backed up by in-depth research, accompanies a presentation diagram.

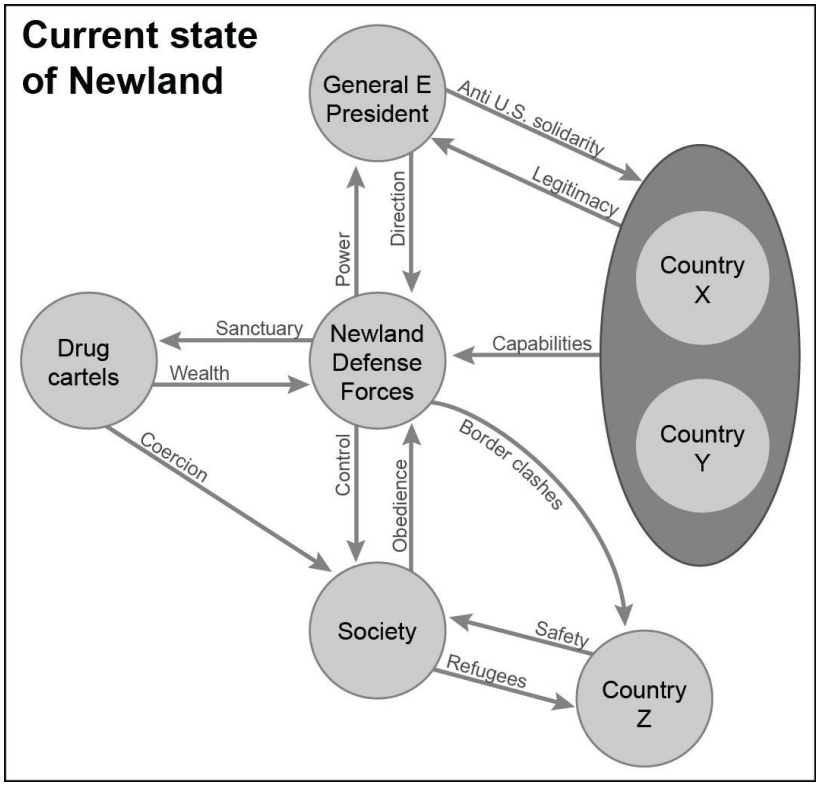


Figure 3-2. Current state of the operational environment

Narrative: The Newland defense force controls the population and provides General E power. The President provides direction to the Newland defense force to control the society. The people comply with the direction provided by 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 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 last six months, over 100,000 persons fled Newland to Country Z. Country Z provides 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 oppresses its people, encourages instability in the region, and supports criminal and terrorist activities is unacceptable to U.S. interests.

3-15. The environmental frame evolves as the commander and planning team discusses and debates their finding. For example, several questions may arise after the commander and team discuss the environmental frame. Questions may include:

- What are the other sources of power in Newland beyond General E?
- What are the limits to the drug money provided by the cartels?
- Is the society this homogenous? What are the different groups and divisions in the population?
- What are some of the other key international relationships or interests with Newland?
- Are there limits to military aid provided by Country X and Country Y?

PROJECT HOW AN OPERATIONAL ENVIRONMENT MAY TREND

3-16. Part of framing an operational environment results in an appreciation for how an operational environment may trend into the future. An operational environment evolves even in the absence of friendly

intervention. If no outside actors influence an operational environment, an operational environment will change due to inherent tendencies in the system. Tendencies reflect an inclination to think or behave in a certain manner. Tendencies are not deterministic, but models describing the thoughts or behaviors of relevant actors. Tendencies identify likely patterns of relationships between actors without external influences. The natural tendencies in an operational environment have the most momentum, and therefore difficult to change. Tendencies can be positive and encouraged or viewed as obstacles that become the focus for change. Friendly actions or activities that reinforce (or at least do not conflict with) natural trends may have the best chance to succeed. Appreciating the natural tendencies in an operational environment better define the desired end state and develops an operational approach that encourages or changes identified tendencies. Visual models support this understanding by text capture.

DISCERN DESIRED FUTURE STATES OF OTHER ACTORS

3-17. The planning team describes alternative future states of relevant actors. Other actors affect an operational environment and have different desired end states. For example, the enemy has a desired set of conditions for the future. These conditions describe their desired end state. Friendly or neutral actors may not have opposing mindsets, but some of their desired conditions may be different from some of the command's desired end state conditions. Further, some desired conditions of other actors converge with the command's desired conditions, with a possibility of exploiting this convergence. The team's understanding of the differences between alternative future states and the command's desired end state help in problem framing. The team captures its understanding of alternative future states of relevant actors in various visual models and narratives.

ENVISION A DESIRED END STATE

3-18. The commander and planning team envision the desired end state based on higher guidance, the current state of an operational environment, and alternative future states of an operational environment. The operation's end state is a set of desired conditions that, if achieved, meet the objectives of policy, orders, guidance, and directives issued to the commander. A desired condition is a sought-after future state of the operational environment. Conditions are tangible or intangible, military or nonmilitary, or physical or psychological. They describe or relate to perceptions, cohesion among groups, or relationship between organizations or individuals. When determining desired end state conditions, the commander and planning team consider their relevance to higher orders, directives, and guidance. The team also considers available resources to ensure end state conditions are feasible.

3-19. Time is important when determining desired end state conditions. How time relates to the desired end state influences the expectation of higher authorities and influences how commanders use forces and capabilities to achieve desired conditions. The commander and planning team use diligence during the planning effort to account for the time expected to achieve desired conditions. They qualify whether the desired conditions are intended to be lasting or transient in nature. This temporal dimension helps develop an effective operational approach and manages expectation.

3-20. Commanders describe the operation's end state by stating the desired conditions of the friendly force in relationship to desired conditions of the enemy, terrain, and civil considerations. Commanders share and discusses their desired end state with their higher commander to ensure unity of effort. Commanders may elect to discuss several proposed end states, and their respective costs, for the higher commander to consider. Figure 3-3 on page 3-6 provides a sample presentation diagram of the desired end state of Newland followed by a narrative.

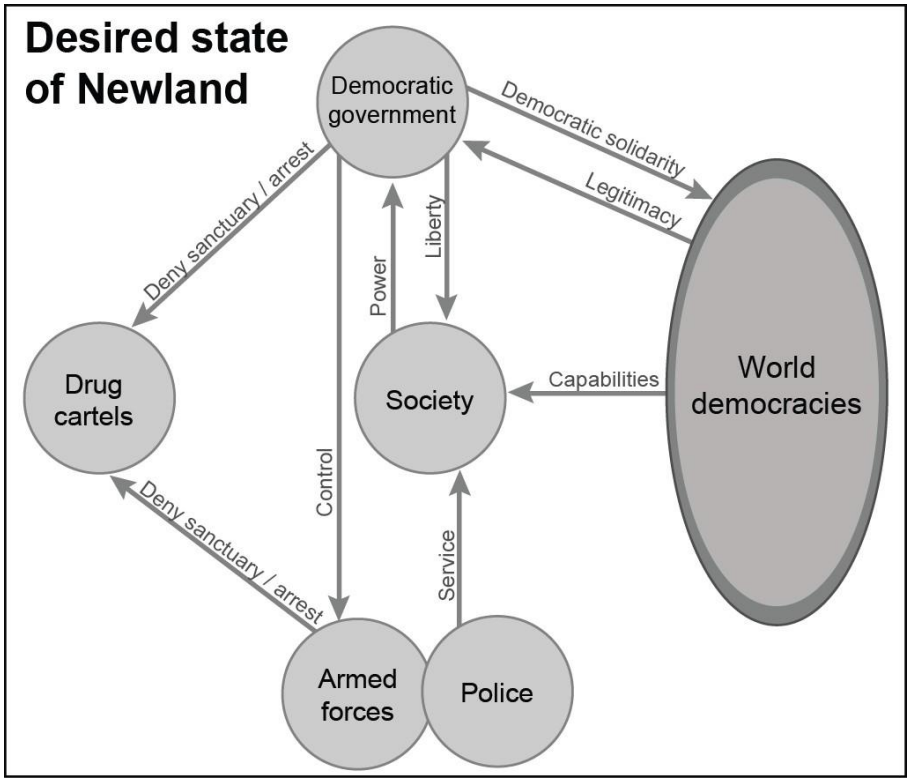


Figure 3-3. Desired end state

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. The 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 serves the society and protects 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.

TOOLS AND TECHNIQUES

3-21. This section offers several tools and techniques that help the planning team with framing operational environments (and problems) including but not limited to:

- Brainstorming, researching, and mind mapping.
- Meta-questioning.
- Questioning of assumptions.
- Four ways of seeing.

BRAINSTORMING, RESEARCHING, AND MIND MAPPING

3-22. A technique for framing an operational environment is through a sequence of brainstorming, researching, and mind mapping. Brainstorming helps the team develop ideas and variables for further research and analysis. Research helps the team understand identified variables to help the team map out the relationships and interdependencies among variables in the operational environment. Combined with critical thinking and continuous dialogue, the result of this technique leads to an in depth understanding of an operational environment and problems in that operational environment.

Brainstorming

3-23. Brainstorming develops an initial understanding of the relevant variables and actors in an operational environment. Brainstorming is a group creative thinking technique that uses different perspectives of individuals in a group to develop and build on ideas. Brainstorming is a thinking tool used to surface a large quantity of ideas without considering the relative value of each. This group process allows others to build on initial ideas developed in the brainstorming secession.

Note: As a technique for stimulating new thinking, brainstorming also helps with framing problems and developing an operational approach.

3-24. A key success in brainstorming is capturing many diverse ideas. Several guides that help reduce inhibition among group members and increase overall group creativity include:

- Allow time for individuals to develop ideas on their own for presentation to the group.
- Focus on quantity of ideas.
- Defer judgment of ideas and withhold criticism.
- Welcome new and unusual ideas.
- Combine and improve upon ideas.

3-25. There are many techniques for brainstorming. The difference between these techniques is the level of structure imposed on the brainstorming session. A less structured technique involves individuals in a group developing ideas about a subject on their own. Individuals offer their ideas to the group while a note taker records these ideas on a white board or paper for all to see. This technique is helpful in initial brainstorming to identify relevant variables and actors in an operational environment.

3-26. A more structured approach involves a divergent thinking phase followed by a convergent phase with associated steps to each phase. The purpose of the divergent thinking phase is to develop and collect new ideas and insights. This technique follows steps to stimulate thinking. Steps in this phase include:

- Pose a "focal question" to the group. For example, "Why is the insurgent movement gaining support?" or "What are the sources of power and influence in region X." Post the focal question on a white board or large easel with white paper.
- Ask individuals to write down responses to the question using key words that fit on a sticky note.
- Stick all the notes on a white board, wall, or paper for all to see—treat all ideas the same.
- Allow for a pause after the initial flow of ideas and ask individuals to add new responses to the question and post their answers.
- End the collection stage of ideas after two or three pauses.

3-27. A convergent phase follows the divergent phase that uses a technique known as affinity mapping. The purpose of the convergent phase is to arrange ideas identified into logical groups. For example, figure 3-4 on page 3-8 groups ideas by recruiting, financing, and training. This includes:

- Asking group participants to arrange the sticky notes according to their commonalities or similar concepts. The group may also copy some notes so ideas can be included in more than one group.
- Selecting a word or phrase that characterizes each grouping or cluster of notes.
- Identifying any notes that do not fit with others and consider them either not relevant or the beginning of an idea that deserves further attention.
- Assess what the group has accomplished in terms of new ideas or concepts identified or new areas that need more research.

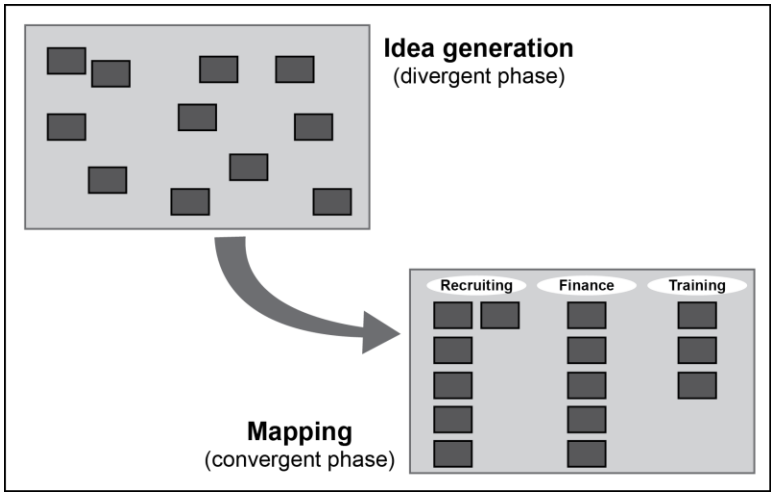


Figure 3-4. Brainstorming

Researching

3-28. Understanding an operational environment requires detailed research and study. Effective planning teams use the results of brainstorming to guide deliberate research of identified variables and actors. Research can be a challenge if members of the planning team have not researched since graduating from civilian schools. Team leaders should leverage those individuals skilled at research. For example, intelligence analysts and civil affairs specialists have good research skills. Research skills are developed and sustained. These skills include:

- Breadth.
- Depth.
- Description, explanation and meaning.
- Form, function, logic.
- Iteration.

Breadth

3-29. For research to be comprehensive, it must be broad. The team leader forms research teams when framing an operational environment to collect as much information as possible in the shortest amount of time. An approach is to divide the planning team into two-person groups and assign each pair a set number of categories, ideally related in some way. The pair researches each category and collects papers, briefings, and videos and presents their findings during group dialogue sessions. Researchers consult with subject matter experts external to the organization to better understand the context and extend the breadth of understanding. Team members research additional categories that emerge during group sessions.

Depth

3-30. Researchers explore each category identified. Researchers consider multiple sources from many governmental, academic, corporate, public and private viewpoints. An internet search reveals relevant books, papers, journals, newspapers, speeches, documentaries, and databases on a subject. In addition, subject matter experts extend the depth of understanding of the research team. For example, a human terrain team that served in the unit's anticipated area of operations (AO) could provide detailed knowledge of the social, tribal, and cultural factors in that area.

3-31. The more sources employed, the more in depth and reliable the research becomes. Sources are classified, unclassified, or open-source. Research note that unclassified and open-source information may be more informative than classified information. To evaluate source credibility, researchers note the authors of their respective documents; author known biases, and the publication dates of the sources. (See ATP 2-22.9,

Open-Source Intelligence, for various research techniques using open-sources and a detailed listing of available open-sources).

3-32. One of the major factors that affect depth and breadth of the research is time. Effective research takes time. Time is a precious commodity in any problem solving or planning endeavor. It is important that planning team leaders allocate enough time for research.

Description, Explanation and Meaning

3-33. Researchers are not content with collecting data and information. Research determines what the data and information means to the organization. Description, explanation, and meaning together lead to understanding. Description provides an articulation of "what" is going on in a situation. Explanation describes "how" something works and meaning explains "why" something is of particular value and importance to the planning team. An accurate expression of description, explanation, and meaning helps the commander and staff make sense of a situation.

3-34. Accurate expression requires analysis. This analysis is to ascribe and validate meaning. Individuals get to meaning through critical thinking and the application of deductive, inductive, and abductive logic to derive an explanation for why the data or information obtained is the way it is. Using deductive reasoning, the researcher draws conclusion from general rules or premises. In deductive reasoning, if all premises are true and the rules of deductive logic are followed, then the conclusion is valid. In contrast to deductive reasoning, inductive reasoning draws conclusion from examples or evidence. In inductive reasoning, premises supply strong evidence for (not absolute proof of) the truth of the conclusion. The truth of an inductive argument is probable based upon the evidence given.

3-35. Many are familiar with deductive and inductive reasoning, but less familiar with abductive reasoning. Abductive reasoning starts with a set of observations (often incomplete) and proceeds with developing to the likeliest possible explanation for the set. Using abductive logic, individuals form a hypothesis of what the various observations mean. A hypothesis is a proposed explanation of a phenomenon (for example, an explanation of the causes of a conflict or problem). If further research does not support the hypothesis, another hypothesis is formed and the reasoning continues until there is a conclusion.

3-36. Using the three types of reasoning, research teams answer the critical questions for their topics. For example, why are the drug cartels fighting each other and why are the insurgents moving back into a river valley? There may be more than one explanation. The team considers each explanation until there is a reason to discard that explanation. Developing these explanations facilitates meaningful and effective decisionmaking. In developing these explanations, team members are aware that their thinking is biased and prone to various logic errors. A way to guard against these bias and logic fallacies is first being aware of them. Appendix A provides a listing of the more common cognitive biases and logic fallacies to guard against.

3-37. Achieving understanding of the meaning of observed data and information is the goal of research. Individuals or small groups that perform research achieve understanding through a clear articulation of the description, explanation, and meaning of observed phenomena.

Form, Function, Logic

3-38. Researchers, whether operating individually or in small groups, think beyond what they see. Data or information describes the form (patterns and relationships) of what is observed. For example, research may reveal three components of a terrorist cell. Researchers move beyond form to discover the function of what they observe. What does the terrorist cell component do? How do they operate? What function do they perform? What was the logic that guided the linkage of form and function or was the logic externally driven by some other considerations? Perhaps one of the components of the terrorist cell provides a position for a favorite son and has nothing to do with what the component does. The planning team understands the relationship of the form, function, and logic of the relationships that create the component of each category.

Iteration

3-39. One pass through a research and synthesis cycle is not sufficient to understand a topic. After initial research and dialogue, the planning team cycles back through the research effort as many times as it takes to achieve understanding for the organization. Some research is refined, some expanded to cover new topics in

a category, some new categories will emerge, and some information will need to be confirmed or conflicts in available information resolved. The planning team performs as many iterations as necessary to fill in the gaps in knowledge, and deliberately correlate and validate information through both analysis and synthesis to improve understanding as time permits.

Mind Mapping

3-40. Mind mapping is a technique for discerning and depicting the relationships of relevant variables and actors in an operational environment and problem. Mind mapping begins with a single idea or topic represented in the center of a white board or paper (for example insurgent recruitment). The planning team writes out secondary ideas and words associated to insurgent recruitment. The team uses lines, symbols, pictures, and colors to show relationships. Examples of secondary ideas associated to "insurgent recruitment" may include:

- Poverty and unemployment.
- Corruption and bad governance.
- Criminality.
- Ethnic factors.
- Civilian casualties.

3-41. The planning team may draw further relationships with criminality including the drug trade, money laundering, and extortion as shown in figure 3-5 on page 3-11. As they continue to map out relationships, the planning team finds a relationship of poverty and unemployment with cultivation and production of illegal narcotics (subcategories under criminality). They find a linkage among corrupt political leaders and the drug trade through bribery and the facilitation of money laundering. The planning team refines various mind maps and develops associated narratives for them to describe their understanding of the operational environment and problems.

Meta-questioning

3-42. The use of disciplined questions or meta-questions helps commanders and staffs probe their own and others' thinking during ADM and throughout the operations process. Meta-questioning is a critical thinking skill that enables a more complete understanding of a topic by asking higher order questions. A way to understand the concept of meta-questioning is by thinking of the different views one gets from different levels of a ladder. An individual's view is somewhat restricted when standing next to a ladder. As the individual takes a few steps up the rungs of the ladder, the view becomes broader. This is true of meta-questions. As individuals and groups ask and answer successively higher order questions, their understanding becomes more comprehensive.

3-43. Meta-questions probe into complex issues that help get at the true qualities of the problem rather than superficial qualities. These higher order questions explore ideas, understand problems, and uncover assumptions. They help challenge claims or premises by revealing a contradiction or internal inconsistency in logic. Examples of questions that probe reasons and evidence include the following:

- Why did it happen?
- Why was it true?
- How does X relate to Y?
- All reasoning depends on the idea that X is the source of conflict. Why is reasoning based on X instead of Y?
- Are there other possibilities?

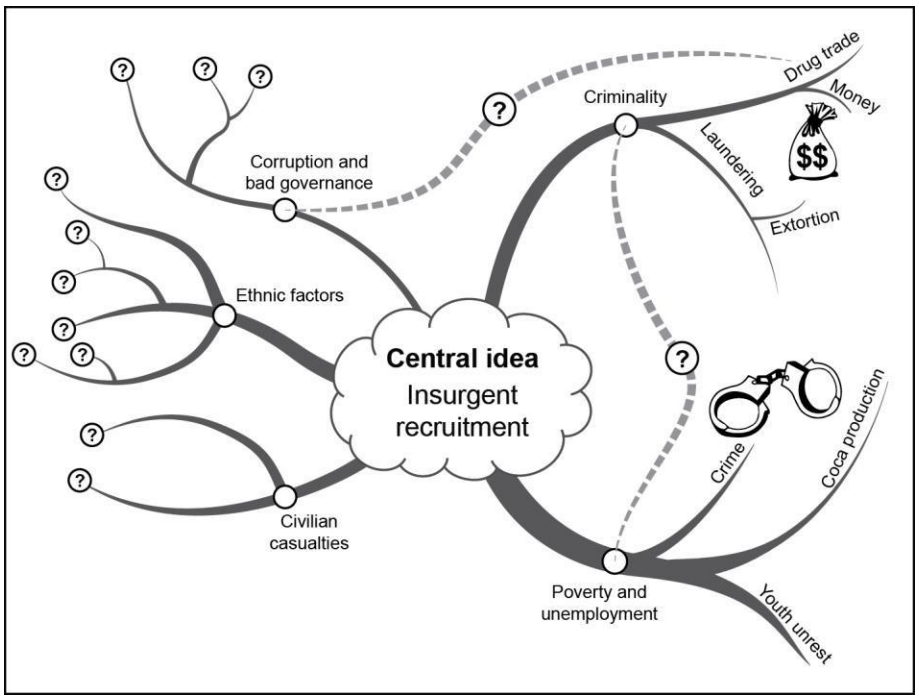


Figure 3-5. Mind map

Questioning Assumptions

3-44. An *assumption* is a supposition on the current situation or a presupposition on the future course of events, either or both assumed to be true in the absence of positive proof, necessary to enable the commander in the process of planning to complete an estimate of the situation and make a decision on the course of action (JP 5-0). An assumption is true in the absence of actions or information contradicting it. Assumptions are probably correct but cannot be verified at the time made. An assumption used during planning has two characteristics:

- It is likely to be true.
- It is necessary to continue planning.

3-45. Assumptions are logical and reflect the reality of the situation. Commanders and staffs are careful with their assumptions to ensure they are not based on preconceptions, bias, false historical analogies, or wishful thinking. Additionally, planners are aware of any unstated assumptions. Often, an unstated assumption is more dangerous than a stated assumption proven wrong. Good assumptions support effective decision-making and problem solving. Conversely, if assumptions are unsupportable or based on faulty reasoning or knowledge, they result in poor decision-making and problem solving.

3-46. Commanders and staffs question whether their assumptions are valid throughout planning and the operations process. Key points concerning the use of assumptions include:

- Assumptions are logical, realistic, and considered likely to be true.
- Too many assumptions result in a higher probability that the plan or proposed solution may be invalid.
- The use of assumptions requires the staff to develop branches and sequels to execute if one or more key assumptions prove false.

3-47. The planning team develops assumptions in the lack of factual evidence as they frame an operational environment and problems. Planning teams record their assumptions and challenge them while planning. Some key questions to help challenge assumptions include:

- Why must this assumption "be true"?
- How much confidence exists that this assumption is true?

- What is the explanation for the degree of confidence for this assumption to be true?
- Could the assumption have been true in the past but less so now?
- If the assumption proves to be wrong, would it alter the line of thinking?
- Has checking assumptions identified new factors that need future analysis?
- What circumstance or information might underline this assumption?

3-48. The planning team works on these questions as a group, assigns a subteam to work on these questions, or solicits support from the unit's red team to help with challenging assumptions.

Four Ways of Seeing

3-49. To develop a richer understanding of an operational environment and problems, it is helpful for the planning team to examine the situation from the perspectives of other actors in the operational environment. For example:

- How does an enemy view the causes of conflict?
- What are the goals of the enemy force in an area?
- How does the enemy force perceive the goals of coalition forces in the area?

3-50. Four ways of seeing is a technique available to planning teams to develop and compare how other actors in an operational environment view a situation or problem. In four ways of seeing, the planning team answers the following questions of actors represented as X and Y.

- How does X view itself?
- How does Y view itself?
- How does X view Y?
- How does Y view X?

3-51. Four ways of seeing is a flexible tool. The planning team can compare the friendly force with an enemy force or other actors or compare multiple actors with each other.

Chapter 4

Framing Problems

This chapter begins with a general discussion of problems. Next, this chapter describes activities associated with problem framing. The chapter concludes with techniques used in framing problems.

NATURE OF PROBLEMS

4-1. A problem is an issue or obstacle that makes it difficult to achieve a desired goal or objective. In a broad sense, a problem exists when an individual notices a difference between the current state and desired end state. In the context of operations, an operational problem is a discrepancy between the state of affairs as it is and the state of affairs as it ought to be that compels military actions to resolve it. An operational problem includes those issues that impede commanders from accomplishing missions, achieving objectives, and attaining the desired end state.

4-2. Army leaders are problem solvers and the complexity of problems they address range from well-structured problems to those extremely complex and ill-structured. The degree of interactive complexity (see chapter 3) of a given situation is the primary factor that determines the problem's structure. Another factor determining problem structure is an individual perception of a problem. Perception of whether a problem is well, medium, or ill-structured depends on the perceived familiarity and understanding of the problem. Table 4-1 describes three types of problems and offers potential solution strategies for each one.

Table 4-1. Types of problems and solution strategies

	Well-structured	***Medium-structured***	***Ill-structured***
Perception	The problem is self-evident.	Leaders easily agree on its structure.	Leaders have difficulty agreeing on problem structure and will have to agree on a shared hypothesis.
Solution development	Solution techniques are available and there are verifiable solutions.	There may be more than one "right" answer. Leaders may disagree on the best solution. Leaders can agree on a desired end state.	Leaders will disagree on— • How the problem can be solved. • The most desirable end state. • Whether the end state can be attained.
Execution of solution	Success requires learning to perfect technique.	Success requires learning to perfect techniques and to adjust the solution.	Success requires learning to perfect technique, adjust the solution, and continuously refine understanding of the problem.
Adaptive iteration	No adaptive iteration required.	Adaptive iteration is required to find the best solution.	Adaptive iteration is required to refine the problem structure and solutions.

WELL-STRUCTURED PROBLEMS

4-3. Well-structured problems are easy to identify because required information is available. In addition, known methods (for example a math formula) are available to solve these types of problems. While difficult to solve, well-structured problems display little interactive complexity and have verifiable solutions. Most individuals are comfortable addressing well-structured problems. Such problems are easy to control through technical means and systematic method-based solutions. The types of problems are easier to recognize and

place in categories. For example, Army doctrine provides tasks, conditions, and standards for problems ranging from tank gunnery to performing a movement to contact. The most structured problems, tank gunnery for example, have one correct solution. Success in gunnery requires learning to perfect the established technique.

MEDIUM-STRUCTURED PROBLEMS

4-4. Medium-structured problems are more interactively complex than well-structured problems. For example, a field manual describes how a combined arms battalion performs a defense, but it offers no single solution that applies to all circumstances. Leaders can agree on the problem and the end state for the operation. However, they may disagree about how to apply the doctrinal principles to a piece of terrain against an enemy. Furthermore, a defense may succeed against one enemy yet fail against another under the same circumstances. Success and failure differs as a function of interactive complexity or technical difference between the two enemy forces. Success during execution requires not only learning to perfect a technique but also adjusting the solution based on changing conditions.

ILL-STRUCTURED PROBLEMS

4-5. Ill-structured problems are complex, nonlinear, and dynamic. These problems are the most challenging to understand and solve. Unlike well or medium-structured problems, leaders disagree about how to solve ill-structured problems, what the end state should be, and whether the desired end state is achievable. At the root of this lack of consensus is the difficulty in agreeing on what is the problem. Unlike medium-structured problems, there is no clear action to take because the nature of the problem itself is not clear. Classic examples of ill-structured problems include social issues like crime, racism, and poverty and military operations as a whole. ADM helps commanders and staffs identify and understand ill-structured problems.

FRAMING ACTIVITIES

4-6. Identifying and understanding problems is essential to solving them. As the planning team understands an operational environment and the desired end state, the planning team shifts their efforts to identifying and understanding those issues that may impede progress toward achieving the desired end state. These interrelated issues represent the problem situation or "system of problems" the command will need to address. During problem framing, commanders and staffs answer questions such as:

- What is the difference between the current state of an operational environment and the desired end state?
- What is the difference between the natural tendency of an operational environment and the desired end state?
- What is the difference between the desired end state of other actors and the desired end state?
- What is preventing the command from reaching the desired end state?
- What needs to change?
- What does not need to change?
- What are the opportunities and threats from a friendly perspective?
- What are the opportunities and threats from an enemy and other actor's perspective?

4-7. The planning team captures its work in a problem frame that describes the set of interrelated problems or system of problems in a narrative supported by visual models. The problem frame supports the commander's dialogue with higher commanders and unified action partners in defining problems and developing common expectations regarding resolution. This is vital to develop an effective operational approach to solve or manage identified problems.

4-8. Like framing an operational environment, there is no "one way" or set of steps for framing problems. There are three activities that help the commander and staff develop a problem frame.

- Review the environmental frame.
- Identify problems and map out their relationships.
- Capture the problem frame in text and graphics.

REVIEW ENVIRONMENTAL FRAME

4-9. The problem frame is an extension of the environment frame as shown in figure 4-1. As such, the planning team begins framing the problem by reviewing the environmental frame. The team reviews the following:

- Current state of the operational environment.
- Projections on how an operational environment may trend in the future.
- Desired future states of other actors.
- Desired end state.
- Problems identified during earlier design sessions.

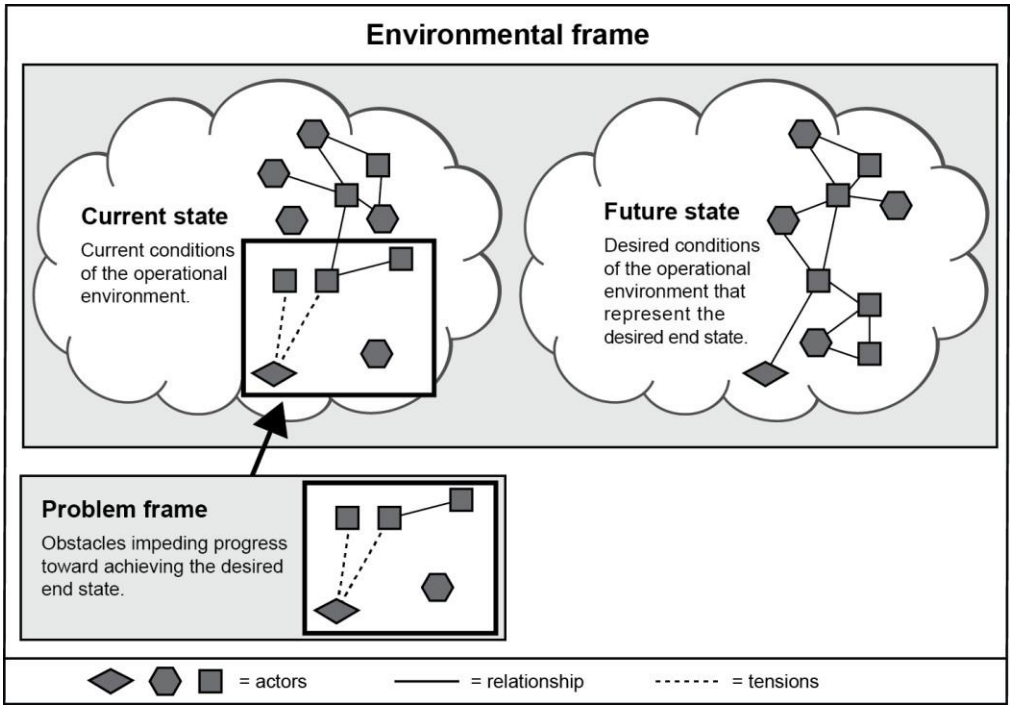


Figure 4-1. Problem frame

IDENTIFY PROBLEMS AND MAP OUT THEIR RELATIONSHIPS

4-10. The goal of problem framing is to identify obstacles impeding progress toward achieving the desired end state. Effective commanders and planning teams recognize that no problem is solved in isolation, but set in relation to other problems in an operational environment. Rarely is there a single problem facing the command. For example, a unit tasked to neutralize insurgents, enable the host nation government to expand its influence, and create a capable security force in an area of operations (AO) may be faced with the following interrelated problems:

- Lack of resolve of the host nation's security force to professionalize and win.
- Host nation security force systems (logistics, personnel, pay) are not functional.
- Host nation security force leadership is incompetent.
- Effective insurgent resistance.
- Lack of intelligence.
- Civilian casualties.
- Population's lack of trust of coalition forces.
- Lack of commitment of the central government to the area.
- Corruption at the district and provincial level beyond the limit of tolerance.
- Security along main supply route.

- The size of the AO.
- Task assigned versus troops available.
- Rotation schedule of higher, adjacent, and subordinate units.
- Limited unity of effort among some unified action partners.

4-11. A technique for identifying problems begins with two questions:

- What is the difference between the current state of the operational environment and the desired state?
- What is preventing the force from reaching the desired end state?

4-12. The team identifies the differences between the desired end state and alternative future states (the natural tendency of an operational environment and desired end states conditions of other actors). These differences are tensions—resistance or friction among and between actors. Combined, these tensions represent the system of problems requiring resolution. In addition to identifying differences, the planning team identifies any shared desired conditions among alternative future states and the friendly end state. Shared desired conditions represent opportunities to leverage and consider when developing the operational approach.

4-13. To help understand the system of problems, it is helpful to map the relationships of the problems identified (see chapter 3 for a discussion on mind mapping). Part of this mapping is explaining the causes or contributors to the problem. For example, team members identify that a certain population group has a history of not participating in the election process. While useful information in itself, the planning team understands and explains why the group does not participate. As the planning team maps out the various problems and related causes, they see that some of the issues are symptoms of a bigger issue. In addition, the team discerns that some problems are outside the scope of their mission. Mapping helps isolate the root cause of problems that the operational approach must address.

DEVELOP A PROBLEM FRAME

4-14. The planning team captures its work in a problem frame that describes the set of interrelated issues in a narrative supported by visual models. The problem frame identifies those issues preventing the command from achieving its desired end state. The problem frame supports the commander's dialogue with higher commanders and unified action partners by defining the problem situation. This is an example of an initial problem narrative based on the Newland scenario from chapter 3.

The Newland defense force is impeding the establishment of a democratic government in Newland and the primary factor of instability in the region. For more than forty years, the Newland defense force maintained power for itself and the regime by oppressing all opposition in 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 in the leadership, and it 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 of a new dictator emerging from the Newland defense force is likely. There is no indication that the leadership of the Newland defense force is willing to relinquish its power in Newland.

4-15. The initial problem narrative develops as the commander and staff learn more about the operational environment and develop an operational approach. For example, the oppressive nature of the Newland defense force is a significant issue, but not the only one. After discussing the problem narrative with the commander and others, the planning team expands the narrative including problems associated with:

- Developing a democratic government.
- Potential for civil conflict.
- Reform and transformation of the armed forces.
- Influence of countries X and Y.
- Power and influence of the drug cartels.

TOOLS AND TECHNIQUES

4-16. The tools and techniques used to frame an operational environment (see Chapter 3) also help frame problems including:

- Brainstorming
- Mind mapping.
- Meta-questioning.
- Questioning assumptions.
- Four ways of seeing.

4-17. Problem restatement is a technique that helps the planning team with framing problems. Before developing an operational approach, the commander and planning team spends some time discussing and examining the results of the problem frame. How the command frames the problem situation directly affects possible solutions. Poor problem framing leads to solutions that may not solve the real issues at hand. Poorly framed problems:

- Are too vague or broad in definition.
- Are too narrow in definition.
- Contain inherent assumptions.
- Contain a presumed solution.

4-18. Problem restatement includes several activities related to the "proposed problem narrative" in a divergent thinking mode. The following activities lead to an alternative perspective to improve the problem narrative:

- Paraphrase the problem situation—restate it using different words without losing the original meaning. Saying the same thing with different words puts a different spin on the meaning, which triggers new perspectives and informative insights.
- Turn the problem situation on its head by stating it in an opposite manner. This provides a different perspective to consider the problem.
- Broaden the focus—restate the problem situation in a larger context. This reveals a narrowly defined problem narrative.
- Redirect the focus—boldly, consciously change the focus of portions of the problem narrative. If the original focus concerned troops available, look at the situation in terms of number of tasks. This task involves looking for unexamined variables affecting the problem frame.
- Ask "Why?" Formulate a "why" to the issues identified in the problem narrative, answer them, and do it again. Performing this activity may reveal insights obscured during previous framing activities.

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Chapter 5

Framing Solutions

This chapter defines an operational approach and describes its purpose. Next, this chapter describes activities associated with developing an operational approach. The chapter concludes with techniques for documenting the results of ADM and transitioning to detailed planning.

OPERATIONAL APPROACH

5-1. Once commanders and planners agree on the problem or set of problems, they develop ways to address them. They do this by developing an *operational approach*—a description of the broad actions the force must take to transform current conditions into those desired at end state (JP 5-0). An operational approach is the commander's visualization of what needs to be done to solve or manage identified problems. It is the main idea that informs detailed planning. The operational approach promotes mutual understanding and unity of effort between the force and unified action partner on the way ahead.

5-2. The operational approach reflects understanding of the operational environment and the problem while describing the commander's visualization of ways to achieve the desired end state as shown in figure 5-1. The operational approach accounts for higher direction, describes required resources in general terms, and identifies risk. Commanders, supported by their planning teams, describe their operational approach in a narrative supported by graphics.

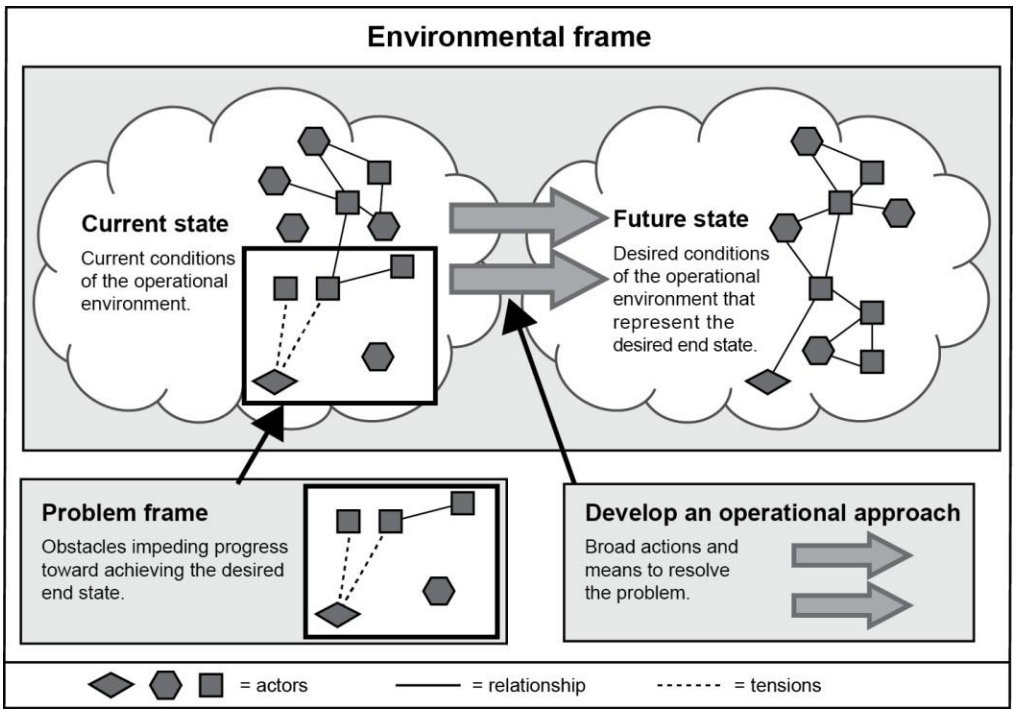


Figure 5-1. Operational approach

Note: An operational approach is not a *course of action*—a scheme developed to accomplish a mission (JP 5-0). An operational approach provides focus and boundaries for the development of courses of action during the military decisionmaking process (MDMP). A course of action is more detailed than an operational approach, including details such as task organization, unit boundaries, and tasks to accomplish. (See FM 6-0 for more details on developing courses of action).

5-3. The operational approach is a conceptualization of "what needs to be done" to solve or manage identified problems. Like the other activities of ADM, commanders collaborate and dialogue with their staffs, other commanders, and unified action partners as they formulate their operational approach. In developing their operational approach, the commander and planning team synthesize early work concerning the operational environment, problem, and desired end state and seek to answer questions such as:

- How do we go from the existing conditions to the desired end state?
- What obstacles or tensions exist between the two?
- What broad actions help attain these conditions?
- What type of resources are required?
- What are the risks?

ACTIVITIES

5-4. As with the other activities of ADM, there is no prescribed format for developing an operational approach. Several activities help the commander and staffs develop an operational approach and translate that operational approach into a plan or order for execution. Activities include:

- Review the environmental and problem frames.
- Formulate an operational approach.
- Document results.

REVIEW THE ENVIRONMENTAL AND PROBLEM FRAMES

5-5. The commander describes the current state of the operational environment and how the operational environment looks when operations conclude (desired end state) to visualize an approach. As such, the commander and planning team review their understanding of the operational environment. Commanders and staffs review conditions that make up the desired end state and those obstacles or tensions that impede the force from achieving that end state. They review their understanding of the enemy's desired end state and desired future states of unified action partners and other actors.

FORMULATE AN OPERATIONAL APPROACH

5-6. While there is no prescribed set of steps to develop an operational approach, the commander and planning team use the elements of operational art to formulate their operational approach. Earlier in ADM, the planning team considered end state conditions. When formulating an operational approach, the commander and planning team consider center of gravity, decisive points, objectives, line of operations, and phasing. The following activities help the commanders and staffs apply the elements of operational art when formulating an operational approach:

- Determine enemy and friendly center of gravity.
- Identify decisive points.
- Determine a direct or indirect approach.
- Establish objectives and devise lines of operations and lines of effort.
- Refine the operational approach.

Center of Gravity

5-7. As an element of operational art, the center of gravity construct helps the planning team understand friendly, enemy, and other actors' sources of strength in an operational environment. A *center of gravity* is the source of power that provides moral or physical strength, freedom of action, or will to act (JP 5-0). Centers of gravity are not limited to military forces and are either physical or moral. Physical centers of gravity, such as a capital city or military force, are easier to identify. In contrast, moral centers of gravity are intangible and more difficult to influence. They can include a charismatic leader, powerful ruling elite, religious tradition, tribal influence, or strong-willed populace. Military means alone are often ineffective when changing moral centers of gravity. Affecting them requires the collective, integrated efforts of all unified action partners.

5-8. A technique for analyzing centers of gravity (enemy, friendly, and other actors) is a framework of three critical factors—capabilities, requirements, and vulnerabilities. Critical capabilities enable a friendly, enemy, or other actor to accomplish its objective(s). Critical requirements are the conditions, resources, and means associated to a critical capability. Critical vulnerabilities are those aspects or components of critical requirements that are deficient or vulnerable to direct or indirect attack in a manner achieving decisive or significant results. Center of gravity analysis helps the commander and planning team determine ways to undermine enemy strengths by exploiting enemy vulnerabilities while protecting friendly vulnerabilities from enemies attempting to do the same. In addition, understanding the relationship among a center of gravity's critical capabilities, requirements, and vulnerabilities helps the team identify decisive points. See JP 5-0, and JP 2-01.3, *Joint Intelligence Preparation of the Operational Environment*, for a more detailed discussion of center of gravity analysis.

Identify Decisive Points

5-9. A *decisive point* is a geographic place, specific key event, critical factor, or function that, when acted upon, allows commanders to gain a marked advantage over an adversary or contribute materially to achieving success (JP 5-0). Decisive points are not centers of gravity; they are keys to attacking or protecting them. Some decisive points are geographic. Examples include port facilities, distribution networks and nodes, and bases of operations. Events and elements of an enemy force are decisive points. Examples of these events include commitment of the enemy operational reserve or reopening a major oil refinery. A common characteristic of decisive points is their importance to a center of gravity. A decisive point's importance requires the enemy to commit significant resources to defend it. The loss of a decisive point weakens a center of gravity and may expose more decisive points.

5-10. Decisive points have a different character during operations dominated by stability or defense support of civil authorities. These decisive points are less tangible and associated with important events and conditions. Examples include—

- Repairing a vital water treatment facility.
- Establishing a training academy for national security forces.
- Securing an election.
- Quantifiably reducing crime.
- Protecting property.

5-11. None of these examples is purely physical. Nonetheless, any may be vital to establishing conditions for transitioning to civil authority.

Determine a Direct or Indirect Approach

5-12. Based on an understanding of centers of gravity and decisive points, the commander and staff consider an approach to contend with a center of gravity. There are two approaches—direct or indirect. The direct approach attacks the enemy's center of gravity or principal strength by applying combat power directly against it. However, centers of gravity are well protected and not vulnerable to a direct approach. Thus, commanders often choose an indirect approach. The indirect approach attacks the enemy's center of gravity by applying combat power against a series of decisive points while avoiding enemy strength. Both approaches use combinations of defeat or stability mechanisms, depending on the situation. Defeat and stability

mechanisms are not tactical missions; rather, these mechanisms describe broad operational and tactical effects.

Defeat Mechanisms

5-13. A *defeat mechanism* is the method through which friendly forces accomplish their mission against enemy opposition (ADRP 3-0). A defeat mechanism is described in terms of the physical or psychological effects it produces. Physical defeat deprives enemy forces of the ability to achieve those aims; psychological defeat deprives them of the will to do so. Army forces are most successful when applying focused combinations of defeat mechanisms. This produces complementary and reinforcing effects not attainable with a single mechanism. Used individually, a defeat mechanism achieves results proportional to the effort expended. Used in combination, the effects are synergistic and lasting. Army forces at all echelons use combinations of four defeat mechanisms:

- Destroy.
- Dislocate.
- Disintegrate.
- Isolate.

5-14. Destroy means to apply lethal combat power on an enemy capability so that it no longer performs any function and cannot be restored to a usable condition without rebuilding. The most effective way to destroy enemy capabilities is with a single, decisive attack. When the necessary combat power is not massed simultaneously, commanders apply it sequentially. This approach is called attrition. It defeats the enemy by maintaining the highest possible rate of destruction over time.

5-15. Destruction may not force the enemy to surrender; well-disciplined forces and those able to reconstitute endure heavy losses without giving up. Defeat cannot be measured by terms of destruction. This is true when criteria focus on narrow metrics, such as casualties, equipment destroyed, or perceived enemy strength. Destruction is difficult to assess if friendly forces apply force indiscriminately. The effects of destruction are transitory unless combined with isolation and dislocation.

5-16. Dislocate means to employ forces to obtain significant positional advantage, rendering the enemy's disposition less valuable, perhaps even irrelevant. It makes the enemy expose forces by reacting to the dislocating action. Dislocation requires the enemy commander to make a choice: accept neutralization of part of their force or risk its destruction while repositioning. Turning movements and envelopments produce dislocation. When combined with destruction, dislocation contributes to rapid success.

5-17. Disintegrate means to disrupt the enemy's command and control system, degrading the ability to conduct operations while leading to a rapid collapse of the enemy's capabilities or will to fight. It exploits the effects of dislocation and destruction to shatter the enemy's coherence. Typically, disintegration follows the loss of capabilities that enemy commanders use to develop and maintain situational understanding, coupled with destruction and dislocation. Simultaneous operations produce the strongest disintegrative effects. Disintegration is difficult to achieve; however, prolonged isolation, destruction, and dislocation can produce it.

5-18. Isolate means to deny an enemy or adversary access to capabilities that enable the exercise of coercion, influence, potential advantage, and freedom of action. Isolation limits the enemy's ability to perform operations effectively by marginalizing one or more of these capabilities. It exposes the enemy to continued degradation through the massed effects of the other defeat mechanisms. There are two types of isolation:

- Physical isolation, which is difficult to achieve but easier to assess. An isolated enemy loses freedom of movement and access to support.
- Psychological isolation, which, while difficult to assess, is an enabler of disintegration. The most important indicators include the breakdown of enemy morale and the alienation of a population from the enemy.

5-19. Isolation rarely defeats an enemy. However, it complements and reinforces other defeat mechanisms' effects. Offensive tasks focus on destroying personnel and equipment. They use maneuver to dislocate forces. However, these effects multiply when combined with isolating the enemy from sources of physical and moral support.

Stability Mechanisms

5-20. A *stability mechanism* is the primary method where friendly forces affect civilians in order to attain conditions that support establishing a lasting, stable peace (ADRP 3-0). As with defeat mechanisms, combinations of stability mechanisms produce complementary and reinforcing effects that accomplish the mission more effectively and efficiently than single mechanisms do alone. The four stability mechanisms are—

- Compel.
- Control.
- Influence.
- Support.

5-21. Compel means to use, or threaten to use, lethal force to establish control and dominance, affect behavioral change, or enforce compliance with mandates, agreements, or civil authority. The appropriate and discriminate use of lethal force reinforces efforts to stabilize a situation, gain consent, or ensure compliance. Conversely, misusing force can adversely affect an operation's legitimacy. Legitimacy is essential to producing effective compliance. Compliance depends on how the local populace and others perceive the force's ability to exercise lethal force to accomplish the mission.

5-22. In the context of stability, control means imposing civil order. It includes securing borders, routes, sensitive sites, population centers, and individuals. It also involves physically occupying key terrain and facilities. Control includes activities related to disarmament, demobilization, and reintegration, as well as security sector reform.

5-23. Influence means to alter the opinions and attitudes of a civilian population. It changes behaviors through nonlethal means. Influence is a product of public perception as a measure of operational success. It reflects the ability of friendly forces to operate in the cultural and societal norms of the local populace while accomplishing the mission. Influence requires legitimacy. Developing legitimacy requires time, patience, and coordinated, cooperative efforts across the operational area.

5-24. Support means establishing, reinforcing, or setting the conditions necessary for other instruments of national power to function effectively. It requires coordination and cooperation with civilian agencies as they assess the immediate needs of failed or failing states and plan, prepare for, or execute responses to them. In extreme circumstances, support requires committing considerable resources for a protracted period. This commitment involves establishing or reestablishing the institutions required for normal life. These typically include a legitimate civil authority, market economy, and criminal justice system supported by government institutions for health, education, and civil service.

ESTABLISH OBJECTIVES AND DEVISE LINES OF OPERATIONS AND LINES OF EFFORT

5-25. Normally, there are far more decisive points in a given operational area that can be attacked, seized, retained, controlled, or protected by available forces and capabilities. Accordingly, planners study and analyze decisive points and determine which offer the best opportunity to attack the adversary's center of gravity, extend friendly operational reach, or enable the application of friendly forces and capabilities. The art of planning includes selecting decisive points that best lead to creating end state conditions in a sequence that most quickly and efficiently leads to mission success. Once identified for action, decisive points become objectives. An objective can be physical (an enemy force or a terrain feature) or conceptual as a goal (rule of law established). Combined with end state conditions, objectives form the building blocks for developing lines of operation and lines of effort.

5-26. Commanders and the planning team devise lines of operations and lines of effort to link objectives in time, space, and purpose to attaining desired end state conditions as shown in figure 5-2 on page 5-6. Commanders describe their operational approach along lines of operations, lines of effort, or a combination of both. Commanders at all levels may use lines of operations and lines of effort to develop tasks to subordinate units and allocate resources. Commanders designate one line as the decisive operation and others as shaping operations. Commanders synchronize and sequence related actions along multiple lines. Seeing these relationships helps commanders assess progress toward achieving the end state as forces perform tasks and accomplish missions.

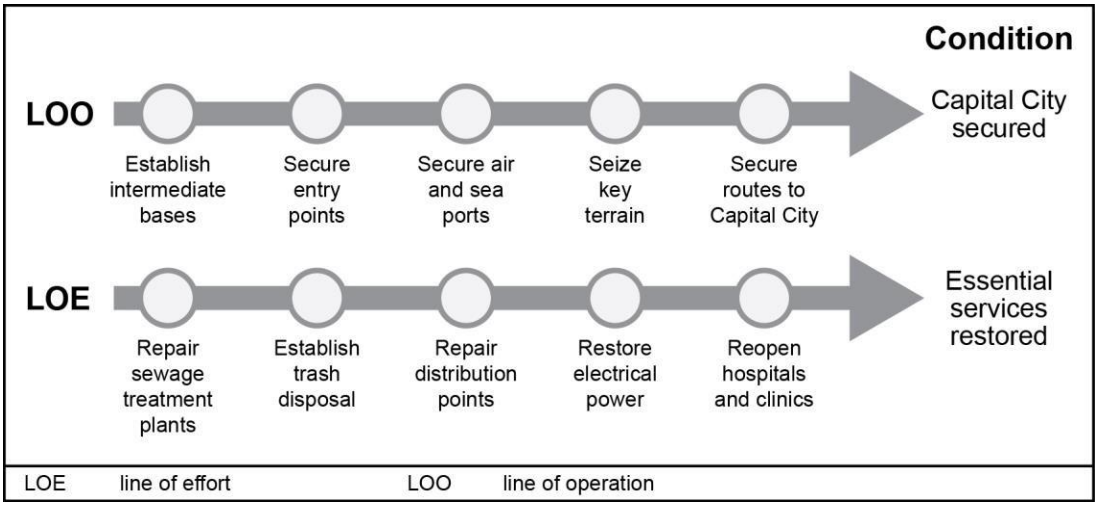


Figure 5-2. Sample line of effort and line of operation

5-27. A *line of operations* is a line that defines the directional orientation of a force in time and space in relation to the enemy and that links the force with its base of operations and objectives (ADRP 3-0). Lines of operations connect a series of actions that lead to control of a geographic or force-oriented objective. Operations designed using lines of operations include a series of actions executed according to a well-defined sequence.

5-28. A *line of effort* is a line that links multiple tasks using the logic of purpose rather than geographical reference to focus efforts toward establishing operational and strategic conditions (ADRP 3-0). Commanders describe their operational approach through lines of effort when positional references to an enemy or adversary have little relevance. In operations involving many nonmilitary factors, lines of effort are the only way to link tasks to the end state.

5-29. Commanders use lines of operations and lines of effort to connect objectives to a central, unifying purpose. The difference between lines of operations and lines of effort is that lines of operations are oriented on physical linkages while lines of effort are oriented on logical linkages. While largely conceptual in nature during this stage of planning, commanders and planners develop lines of operation and lines of effort with an appreciation for required resources to execute the operational approach.

REFINE THE OPERATIONAL APPROACH

5-30. While an operational approach is broad in nature, it describes the commander's visualization in time, space, and purpose. It also addresses resources required to support the operational approach and identify risk. After forming a framework for the operational approach using lines of operations and lines of effort, commanders and planning teams consider additional elements of operational art to refine the operational approach. Additional elements of operational art to consider include:

- Operational reach, basing, and culmination.
- Tempo.
- Phasing and transitions.
- Risk.

Operational Reach, Basing, and Culmination

5-31. Commanders and the planning team develop the operational approach in anticipated resource constraints considered in framing an operational environment. To help visualize ways to sustain and protect the force, the commander and planning team consider operational reach, basing, and culmination.

5-32. Operational reach is the distance and duration across which a force can successfully employ its capabilities. The skillful positioning of forces, reserves, bases, and equipment extend operational reach. Although reach might be constrained or limited by the geography, the enemy, and adversaries in and around an operational area, reach is extended by—

- Forward positioning of capabilities and resources.
- Increasing the range and effectiveness of weapons systems.
- Leveraging host nation support and contract support.

5-33. Basing, in the broadest sense, is an indispensable part of operational art. It is tied to lines of operations and affects operational reach. In particular, the arrangement and positioning of bases in an operational area underwrites the ability of the force to protect its components from enemy action while expanding the distance and duration of capabilities. Commanders consider bases and base camps as intermediate staging bases, lodgments (subsequently developed into base camps or potentially bases), and forward operating bases as part of the operational approach.

5-34. Commanders consider culmination when developing their operational approach and visualizing resources to support it. A *culminating point* is that point in time and space at which a force no longer possesses the capability to continue its current form of operations (ADRP 3-0). Culmination means a shift in relative combat power. It is relevant to both attackers and defenders at each level of war. While conducting offensive tasks, the culminating point occurs when the force cannot continue the attack and assumes a defensive posture or executes an operational pause. While conducting defensive tasks, it occurs when the force cannot defend itself and withdraws or risks destruction. The culminating point is difficult to identify when forces conduct stability tasks. Two conditions result in culmination: units being too dispersed to secure an area of operations (AO) or units lacking resources to achieve the end state.

Tempo

5-35. Tempo is another element to consider when developing an operational approach. *Tempo* is the relative speed and rhythm of military operations over time with respect to the enemy (ADRP 3-0). Tempo reflects the rate of military action. Controlling tempo helps commanders keep the initiative during combat operations or establish a sense of normalcy during humanitarian crises. During operations dominated by offensive and defensive tasks, commanders maintain a higher tempo than the enemy does; a rapid tempo overwhelms an enemy's ability to counter friendly actions. It is the key to achieving a temporal advantage during operations. During operations dominated by stability tasks, commanders control events and deny the enemy positions of advantage. By acting faster than the situation deteriorates, commanders change the dynamics of a crisis and restore stability.

5-36. Army forces expend more energy and resources when operating at a high tempo. Commanders assess the force's capacity to operate at a higher tempo based on its performance and available resources. An effective operational approach varies tempo throughout an operation to increase endurance while maintaining appropriate speed and momentum.

Phasing and Transition

5-37. The ability Army forces to extend operations in time and space, coupled with a desire to dictate tempo, presents commanders with more objectives than the force can engage simultaneously. This requires commanders and staffs to consider sequencing operations. Commanders do this by phasing an operation. A *phase* is a planning and execution tool used to divide an operation in duration or activity (ADRP 3-0). A change in phase involves a change of mission, task organization, or rules of engagement.

5-38. Phasing extends operational reach. Only when the force lacks the capability to accomplish the mission in a single action do commanders phase the operation. Each phase should—

- Focus effort.
- Concentrate combat power in time and space at a decisive point.
- Accomplish its objectives deliberately and logically.

5-39. Transitions mark a change of focus between phases or between the ongoing operation and execution of a branch or sequel. Shifting priorities between the core competencies or among offensive, defensive, stability, and defense support of civil authorities tasks involve a transition. Transitions require planning and preparation before execution to maintain the momentum and tempo of operations. The force is vulnerable during transitions and commanders establish clear conditions for execution.

Risk

5-40. Risk, uncertainty, and chance are inherent in all military operations. During ADM, it is important for commanders, supported by their staffs, to identify and communicate risk to mission accomplishment. Part of developing an operational approach includes answering the question, "What is the chance of failure or unacceptable consequences in employing the operational approach?" Risks range from resource shortfalls to an approach that alienates a potential friendly actor. Commanders and staffs evaluate assumptions to develop the operational environment as potential areas of risk. Identified risks are communicated to higher headquarters and risk mitigation guidance is provided in the commander's planning guidance. (See ATP 5-19 for a discussion of risk management.)

DOCUMENT RESULTS

5-41. A critical aspect of ADM is transferring the understanding and knowledge developed during ADM to others on the staff; subordinate, adjacent, and higher commanders; and unified action partners. The goal of documenting the results of ADM is to capture the tacit knowledge gained during ADM into explicit knowledge for others to apply. Tacit knowledge resides in an individual's mind where explicit knowledge consists of written or otherwise documented information. Products of ADM including the environmental frame, problem frame, and operational approach, may be part of the unit's operations order. (See FM 6-0 for the Army's operations order format.)

5-42. The planning team helps the commander summarize their understanding of the operational environment and the problem, along with describing the operational approach to solve the problem. Key outputs of ADM conveyed in text and graphics include:

- Description of the operational environment.
- Description of the problem.
- Description of the operational approach
- Initial commander's intent.
- Panning guidance including operational timings, resources requirements in broad terms, and risk.

5-43. Similar to an environmental frame and a problem frame, commanders and staff use graphics and text to describe the operational approach. Figure 5-3 on page 5-9 shows an operational approach using lines of effort, defeat and stability mechanisms, objectives, and end state conditions.

TRANSITIONING TO DETAILED PLANNING

5-44. The products of ADM support the development of a detailed plan or order using the MDMP. The transition between ADM and the MDMP is important to convey the understanding and logic developed by the planning team to those developing the detailed plan. Briefing the results of ADM and handing over associated products to another planning team is not an effective approach. Often the same planning team that led the design effort leads the staff through the MDMP. If not, key members of the planning team are part of the core element of the planning team performing the MDMP.

5-45. During the mission analysis step of the MDMP, products of ADM are refined as the commander and staff learn more about the situation. The planning team rechecks and validates assumptions developed during ADM. Commanders consider new information and modify their visualization as required before issuing planning guidance for the development of courses of action.

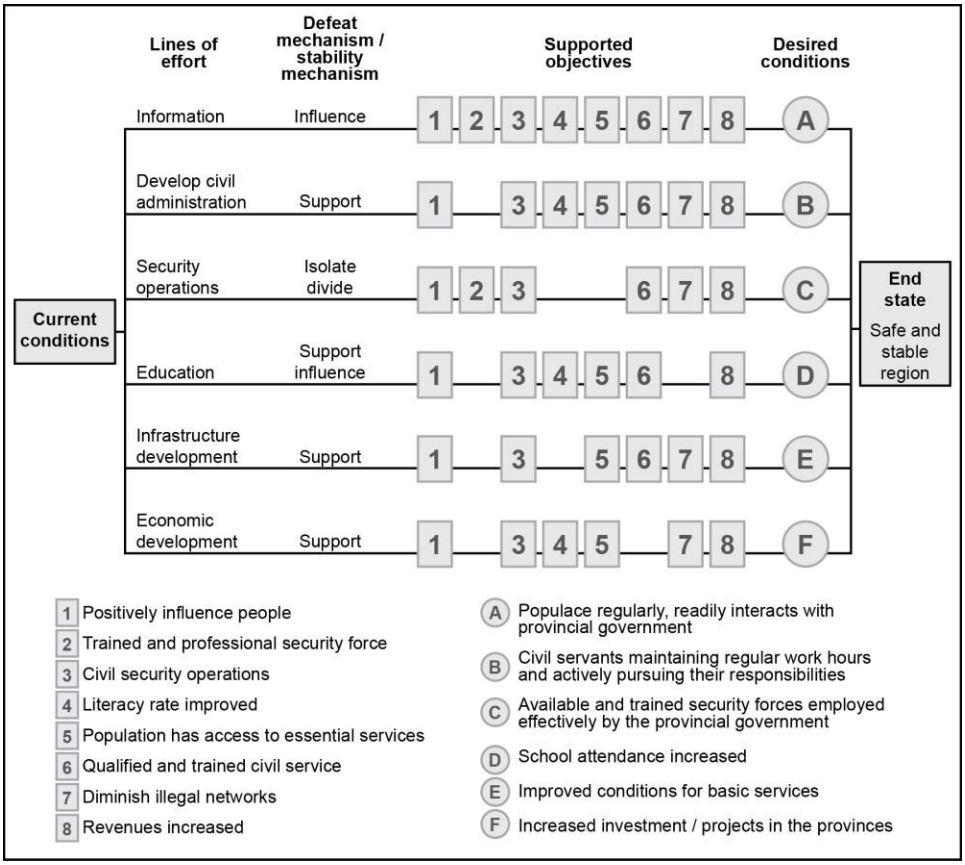


Figure 5-3. Sample operational approach

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Chapter 6

Assessment and Reframing

The chapter begins with a general discussion of organizational learning. Next, it describes how assessment and reframing helps commanders with adapting operations to changing circumstances. The chapter concludes with techniques available to help the commander and staff with assessing operations and reframing.

ORGANIZATIONAL LEARNING

6-1. Organizational learning is a field of study that examines ways organizations learn and adapt. A premise behind this discipline is that in order for an organization to remain relevant, it must continue to grow and adapt to changes in the environment. Organizations, however, do not normally adapt effectively by accident. To adapt effectively, an organization must develop a deliberate system of learning to help that organization make informed choices on ways to change.

6-2. Best practices suggest that successful Army units develop, maintain, and employ an organizational learning system that contributes to effective decisionmaking throughout an operation (from deployment to redeployment). There are numerous tools and techniques that support the commander to promote organizational learning throughout operations including:

- Knowledge management (see ATP 6-01.1).
- Collaboration and dialogue.
- Running estimates.
- Backbriefs and rehearsals.
- After action reviews.
- Center for Army Lessons Learned products and databases.

6-3. ADM helps commanders promote organizational learning. The collaborative nature of ADM encourages diverse perspectives. The creative thinking aspects of ADM help develop innovative solutions to problems and ways to adapt the organization to changing circumstances. Continuous assessment and reframing are other ways ADM enables organizational learning.

ASSESSMENT

6-4. *Assessment* is the determination of the progress toward accomplishing a task, creating a condition, or achieving an objective (JP 3-0). Assessment involves comparing forecasted outcomes with events to determine the effectiveness of force employment. More specifically, assessment helps the commander determine progress toward attaining desired end state conditions, achieving objectives, and accomplishing tasks. Assessment involves monitoring and evaluating the operational environment to determine what changes affect operations.

6-5. 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 personal observations, the common operational picture, running estimates, and the assessment plan. The latter includes measures of effectiveness (MOE), measures of performance (MOP), and reframing indicators. 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.

6-6. 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.

6-7. *Monitoring* is continuous observation of those conditions relevant to the current operation (ADRP 5-0). Monitoring in the assessment process allows staffs to collect relevant information, specifically that information about the current situation to compare to the forecasted situation described in the commander's intent and concept of operations. Commanders cannot judge progress or make effective decisions without an accurate understanding of the current situation.

6-8. 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 (ADRP 5-0). Evaluation is at the heart of the assessment process where most of the analysis occurs. Evaluation helps commanders determine what works and what does not work. It also helps them gain insights into how to accomplish the mission.

6-9. Criteria in the forms of MOEs and MOPs help determine progress toward attaining end state conditions, achieving objectives, and performing tasks. MOEs determine if a task achieves 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 as indicators for evaluation.

6-10. 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 use to the commander is limited. 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 in their delegated authority. Recommendations to the commander range from continuing the operation as planned, executing a branch, or reframing. (See ADRP 5-0 and JP 5-0 for more information on assessment.)

REFRAMING

6-11. Through continuous assessment, the commander and staff monitor the operational environment and progress toward obtaining end state conditions and achieving objectives. Assessment helps commanders measure the overall effectiveness of employing forces and capabilities to ensure that the operational approach remains feasible and acceptable in the context of the higher commander's intent and concept of operations. If the current operational approach is failing to meet these criteria, or if aspects of the operational environment or problem change significantly, the commander may decide to begin reframing efforts.

6-12. A reframe is a shift in understanding that leads to a new perspective on the problem or its resolution. Reframing is the activity of revisiting earlier hypotheses, conclusions, and decisions that underpin the current operational approach. In essence, reframing reviews what the commander and staff believe they understand about the operational environment, the problem, and the desired end state. At any time during the operations process, the decision to reframe may be triggered by factors such as:

- Assessment reveals a lack of progress.
- Key assumptions prove invalid.
- Unanticipated success or failure.
- A major event that causes "catastrophic change" in the operational environment.
- A scheduled periodic review that shows a problem.
- A change in mission or end state issued by higher authority.

6-13. During operations, commanders reframe after realizing that desired conditions have changed, are not achievable, cannot be attained through the current operational approach, or because of change of mission or end state. Reframing provides the freedom to operate beyond the limits of any single perspective. Conditions

change during execution, and such change is expected because forces interact in the operational environment. Recognizing and anticipating these changes is fundamental to an organization's ability to learn.

6-14. Reframing incorporates the concept of double-loop learning—an organizational learning concept that distinguishes the differences between single-loop and double-loop learning. In single-loop learning, individuals, groups, or organizations modify their actions according to the difference between expected and obtained outcomes. In single-loop learning, an organization detects errors and makes corrections to accomplish existing goals and solve familiar problems. In contrast, double-loop involves error correction where things are not so predictable. In double-loop learning, individuals, groups, or organizations question the values, assumptions and policies that led to the actions in the first place. (See source note 2.)

6-15. Effective units incorporate single- and double-loop learning throughout operations. Army commanders and staffs practice single-loop learning to assess the progress of an operation and modify plans to bring operations back on track with their original visualization. Operations rarely unfold as visualized during planning. Commanders and staffs recognize the triggers, cues, and characteristics of the situation that indicate the underlying logic behind the plan was flawed and is no longer applicable. This is not an easy task because once an issue is framed and a mental model formed, it is natural for commanders and staffs to not see (or even discard) indicators and events that do not conform to the original understanding and visualization of an operation.

6-16. During execution, it is important that commanders, supported by the staff and subordinate commanders, question their original understanding and visualization of the operations. Commanders question early assumptions, hypotheses, and conclusions that underpin the current plan during design sessions, commander's conferences, or long-range assessment meetings. This may lead to the commander directing an effort to reframe the operational environment and problems and develop a new operational approach.

6-17. Figure 6-1 shows reframing in operations. As depicted, planning begins a cycle of the operations process. Because operations never occur as envisioned, commanders refine the plan during preparation and execution. During execution, assessment helps identify variances to the commander's original visualization. A variance is the difference between the actual situation and forecasted situation at the time or event.

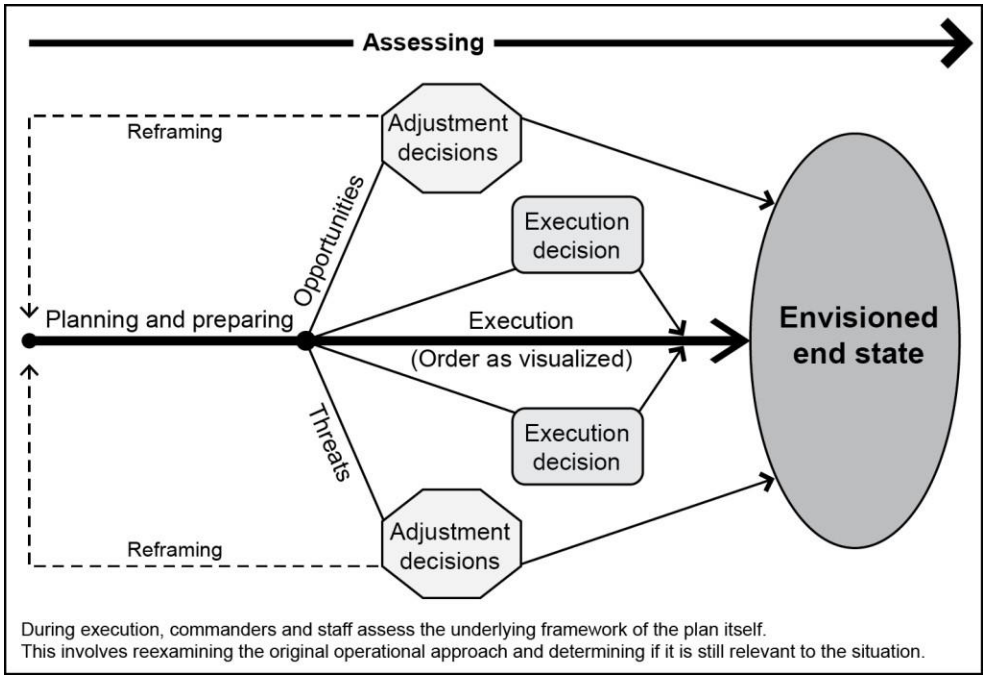


Figure 6-1. Decisionmaking during execution and reframing

6-18. Two forms of variances exist: opportunities and threats. An opportunity results from forecasted or unexpected success. When commanders recognize an opportunity, they alter the order to exploit it if the change achieves the end state without incurring unacceptable risk. The second form of variance is a threat to

mission accomplishment or survival of the force. When recognizing a threat, the commander adjusts the order to eliminate the enemy advantage, restore the friendly advantage, and regain the initiative. Not all threats to the force or mission involve hostile or neutral persons. Disease, toxic hazards, and natural disasters are examples of other threats.

6-19. Depending on the magnitude of the variance identified, commanders make execution and adjustment decisions throughout execution. Execution decisions implement a planned action under circumstances anticipated in the order. An adjustment decision is the selection of a course of action that modifies the order to respond to opportunities or threats. In some instances, the variance is so extreme that no branch or sequel is available or the current plan lacks the flexibility to respond to the variance. In this situation, the commander and staff may reframe the operational environment and the problem resulting in a new plan. This starts a new cycle of the operations process.

TOOLS AND TECHNIQUES

6-20. Tools and techniques that help the commander and staff assess operations and to reframe including:

- Assessment plan.
- Assessment working group.
- Reframing indicators.
- Periodic design sessions.
- Premortem analysis.

ASSESSMENT PLAN

6-21. The staff develops an assessment plan to help judge progress of an operation. The assessment plan incorporates criteria (MOP, MOE, and indicators) used to evaluate completed tasks, achieved objectives, and obtained end state conditions. An effective assessment plan incorporates the logic used to build the plan. Each plan is built on assumptions and an operational approach—a broad conceptualization of the actions that produce the conditions to define the desired end state. The logic as to why the commander believes the actions in the plan will produce the desired results is an important consideration when developing the assessment plan. Recording and understanding this logic during ADM helps the staff recommend the appropriate MOP, MOE, and indicators for assessing the operation. It also helps the commander and staff determine if they need to reframe the problem if assumptions prove false or the logic behind the plan appears flawed as operations progress. (See FM 6-0 for details in building an assessment plan.)

ASSESSMENT WORKING GROUPS

6-22. All staff sections assess progress. It is not the responsibility of any one staff section or command post cell. Each staff section assesses the operation from its area of expertise. However, these staff sections coordinate and integrate their individual assessments and associated recommendations across the warfighting functions to produce a comprehensive assessment for the commander. A technique to develop a comprehensive assessment is to form an assessment working group.

6-23. The assessment working group is cross-functional by design and includes membership from across the staff, liaison personnel, and other unified action partners outside the headquarters. Commanders direct the chief of staff, executive officer, or a staff section leader to run the assessment working group. Selected personnel that participated in developing the environment frame, problem frame, and operational approach are a part of the assessment working group.

REFRAMING INDICATORS

6-24. It is helpful to think in advance about what circumstance, events, or changes require the command to reframe. As such, the commander and planning team develop reframing indicators. A reframing indicator helps identify a condition in the operational environment that has changed or that could cause a shift in the problem such that the current operational approach may no longer be valid. Although many reframing indicators will not meet the requirement for the commander's critical information requirement, some reframing indicators could be included in the commander's critical information requirements if they represent

information that would cause the commander to consider near-term reframing and potential redesign. An example of such information could be the impending alliance of a regional nation with the enemy that shifts the balance of power in spite of an earlier assumption that this alliance would not occur. Reframing indicators support the commander's ability to understand, learn, adapt, and reframe as necessary. Examples of such information include the following:

- Changes in the original problem statement.
- Significant changes in the enemy composition.
- Significant changes in the expected enemy approach.
- Significant changes in friendly capability.
- Higher headquarters policy changes or directives that change the desired end state.
- Unexpected lack of friendly progress toward objectives.
- Shifts in international support and/or domestic will.
- Key assumptions prove to be invalid.

PERIODIC DESIGN SESSIONS

6-25. One of the most important questions when assessing an operation is whether the plan is still relevant. Assessment entails measuring progress according to the plan. It includes periodically reexamining the logic and assumptions of the original plan to determine if it is still relevant. It is difficult to get outside pre-existing mindsets associated with the current plan—especially when involved in protracted operations. It is helpful for the commander and planners to step back from formal assessment and reexamine the situation free of existing mindsets. As such, the commander directs a periodic design session to look at the environmental and problem frames and to examine if the current operational approach is still valid.

PREMORTEM ANALYSIS

6-26. Premortem analysis is a thinking tool to help leaders examine the premises behind a proposed course of action, assumption, or a specified task. This tool breaks ownership to a particular plan of action through a series of questions that focus on what may cause the plan to fail. The premise for premortem analysis is that during planning, the commander and planners may have become too confident in the plan itself. By imagining ways the plan could fail and discerning why, commanders and staffs improve the plan and develop reframing indicators to consider during education. In a group setting, the following steps help perform a premortem analysis of a plan.

- All members of the group become completely familiar with the plan.
- As a group, imagine a fiasco or set of circumstances that could cause the plan to fail.
- Individually develop the reasons for failure.
- As a group, discuss each reason and record all ideas.
- Revisit the plan to determine what to revise in the plan including recommending concepts for potential branch plans.
- Refine the list of reasons the plan may fail and develop reframing indicators.
- Periodically review the list of reasons the plan could fail and reframing indicators during execution.

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Appendix A

Thinking Challenges

Critical thinking and creative thinking are essential leader skills and key components of Army design methodology (ADM). This appendix describes how humans think, discusses influences on thought, and addresses challenges to good thinking. These challenges are biases and logic fallacies. Commanders and staffs are aware of and guard against these biases and fallacies to improve the quality of their thinking and decisionmaking.

COGNITION

> *Everyone thinks; it is our nature to do so. But much of our thinking, left to itself, is biased, distorted, partial, uninformed or downright prejudice.* (See source note 3.)
>
> Richard Paul and Linda Elder

A-1. Cognition is thinking—it is the mental process of knowing that includes awareness, perception, reasoning, and intuition. Research points to the existence of two systems at work simultaneously in individuals' minds as they think. One system the individual controls consciously. The other system operates without the individual being aware of it most of the time. These are referred to as the conscious and the subconscious systems. Individuals use the conscious system when they study, analyze information, weigh evidence, argue, and make choices. The subconscious system operates independently and enables a kind of thinking commonly known as intuition. (See source note 4.)

A-2. Instead of exerting explicit mental energy to make a decision, the subconscious system relies on information from experience. For example, when individuals drive to an unfamiliar location guided by map, they use their conscious system. When they seek the same destination six months later, even without directions, they may be able to find the way by relying on information recorded by the subconscious system. The subconscious system recorded information such as the time between landmarks, the sensations of sharp or gradual curves; climbs and descents; smells and sounds encountered along the way. It aids navigation without the individuals being consciously aware of it. Those cues form a pattern in the individuals' memory, which they recognize subconsciously when they travel that route again. The more experience individuals have, the more detailed and enduring their store of subconscious knowledge becomes. Collectively, these experiences shape something known as mindset.

A-3. A mindset is a set of assumptions and core beliefs (mental models) that form a lens through which individuals perceive the world. A mindset can be so engrained that individuals subconsciously and consciously resist information that does not conform to that mindset. When information is lacking, as often the case when framing an operational environment and problems, individuals rely on prior beliefs and assumptions about how and why events came to be and would normally transpire. In essence, these mindsets are a distillation of all that planners think they know about a subject.

A-4. As planners evaluate information they need to be aware that mindset, along with other cognitive biases, influences all their thinking. Planners guard against fallacious reasoning often used, sometimes intentionally and sometimes out of ignorance, to support an argument. Paragraphs A-5–A-16 discuss cognitive biases and logic fallacies. (See source note 5.)

COGNITIVE BIASES

A-5. A cognitive bias is an unconscious belief that conditions governs or compels human behavior. Just as planners must know their own mindset and its influence on conscious thought, they must also know other cognitive biases that influence their thinking. Some of the more common cognitive biases include:

- Confirmation bias.
- Status quo bias.
- Sunk cost bias.
- Sample size bias.
- Anchoring bias.

CONFIRMATION BIAS

A-6. Confirmation bias is when individuals seek confirmatory information for conclusions they have made prematurely, not realizing that the evidence supports several hypotheses. As a result, individuals fail to search for or discard inconsistent and disconfirming evidence. This bias emphasizes the need for the commander to establish a culture of collaboration and dialogue in the organization.

STATUS QUO BIAS

A-7. Many humans find the status quo comfortable and avoid changing it. A status quo bias may be present when individuals display the inclination to keep their circumstances stable. When individuals avoid change, they assign unwarranted weight to information that justifies maintaining the current conditions. This bias is more prevalent under conditions of stress where stability and predictability are a source of comfort.

SUNK COST BIAS

A-8. Sunk cost bias is a powerful tendency to recover unrecoverable costs of an earlier decision. An individual may justify a previous decision by persisting in it even when the evidence indicates it was wrong or a change is in order. One reason for the power of this bias is that it is hard for people to face-up to their mistakes. After investing time and effort in planning—even though time and effort cannot be recovered—a leader may stick to the plan long after its assumptions have been refuted. In extreme instances, continuation of a very costly endeavor may seem preferable to an unfavorable outcome. To avoid this bias, the planning team may seek advice from people with no stake in earlier decisions.

SAMPLE SIZE BIAS

A-9. Sample size bias occurs when individuals make generalizations based on small sample sizes. Instead of considering how truly representative the information is to the particular situation, individuals unconsciously treat the small sample as a large sample. Large samples are accepted to be highly representative of the situation or populations from which they are drawn.

ANCHORING BIAS

A-10. Anchoring bias is a tendency for humans to use initial estimates or information as a starting point for adjustment. Even though additional information invalidates the initial estimate, humans unconsciously use the initial estimate as a starting point when making subsequent adjustments. They are anchored to the initial estimate. As a result, any adjustments will be closer to the initial estimates than they ought to be.

LOGIC FALLACIES

A-11. A logic fallacy is an error in logic. When analyzing information, the goal of analysis is to ascribe and validate meaning. When individuals make an argument, they offer reasons why others should accept their view(s) or judgment. These reasons are premises (sometimes evidence) and the assertion that they allegedly support is called the conclusion. A sound argument meets the following conditions: the premises are acceptable and consistent; the premises are relevant to the conclusion and provide sufficient support for the conclusion, and; missing components have been considered and are judged consistent with the conclusion. If the premises are dubious or if they do not warrant the conclusion, then the argument is fallacious.

A-12. Logic fallacies improperly influence decisionmakers because they are psychologically compelling and there is some degree of truth to the conclusion. Common logic fallacies include:

- Arguments against the person.
- Appeal to unqualified authority.
- Red herring.
- Weak analogy.

ARGUMENTS AGAINST THE PERSON

A-13. This fallacy occurs when someone tries to attack a person and not a position or argument. Instead of assessing the argument or position based on the premises or conclusion, the argument is ignored and the arguer is attacked. Awareness of this fallacy should cause the planning team to know their biases and prejudices to ensure they do not fall victim to a seemingly convincing argument based on an unsupported attack on a person or group advancing the information.

APPEAL TO UNQUALIFIED AUTHORITY

A-14. A valid technique to support a premise is to cite a trusted authority on the topic. A logic fallacy occurs when the authority cited does not have strong credentials for the matter at hand. To avoid this fallacy, planners verify the qualifications of the source of information gathered during research. In other words, the researcher assesses the qualifications of the individuals providing information to the planning team. This is true when using open-source documents or if the planning team has asked for subject matter expertise from outside the organization. If these qualifications are not verified, the planning team may be misled by an appeal to unqualified authority and convinced of the validity of what is, in fact, a fallacious argument.

RED HERRING

A-15. The red herring fallacy is committed when an individual's attention is diverted with distracting information that is flashy, eye-catching, or not relevant to the topic at hand. A red herring may be used intentionally to divert the attention of the rest of the team from a flawed argument or it may be used inadvertently because of poor logic. A way to avoid the red herring fallacy is to ensure members of the team stay focused on the premises of the argument and the conclusion they support.

WEAK ANALOGY

A-16. Analogies are an effective way to communicate concepts, especially complex ones. An analogy occurs when one situation side-by-side with another and there are similarities. Analogies may be history or individual or group experience. Quite often, these analogies are strong and are useful in illustrating a valid point. The fallacy of weak analogy is committed when the analogy used is not strong enough to support the conclusion drawn.

ADDITIONAL THINKING CHALLENGES

A-17. There are additional traps and errors the planning team must consider that do not neatly fit into either the bias or the logic fallacy category. Nonetheless, they have an impact on how the planning team determines what to believe.

- Groupthink.
- Mirror imaging.
- Cultural contempt.

GROUPTHINK

A-18. ADM relies on critical and creative thinking by a group. While working in a group is advantageous to both critical and creative thinking, group problem solving has potential pitfalls. One of these pitfalls is "groupthink." Groupthink refers to a mode of thinking that people engage in when they are deeply involved in a cohesive group. It occurs when members, striving for agreement, override their motivation to evaluate evidence or alternative options. The group makes a collective decision and feels good about it because all members favor the same decision. In the interest of unity, there is limited debate or challenge to the selected

solution. Group pressures towards consensus leads to concurrence-seeking tendencies by individual group members.

A-19. Being aware of the existence of groupthink is the most important factor in avoiding it. There are several ways to help avoid groupthink:

- Encourage group members to express objections or doubts.
- Refrain from expressing preferences about potential solutions.
- Assign two independent subgroups to work on the problem.
- Discuss the group's ideas with people outside the group.
- Invite subject matter experts from outside the group to discuss the issues at hand.
- Employ the unit's red team to challenge the team thinking and provide alternative perspectives.

MIRROR IMAGING

A-20. Mirror imaging means planners fill in gaps of understanding and knowledge by assuming that the other side or another party acts in a certain way because that is how they would do it under similar circumstances. Failure to appreciate that others perceive their interests differently leads to faulty assumptions. Perception on how others act is often irrelevant. Judgments must be made on how others perceive their interests. If planners cannot gain insight in what others are thinking, mirror imaging may be the only alternative. Planners recognize this and do not place a lot of confidence in that kind of judgment. See chapter 3 for a discussion on four ways of seeing as a way to guard against mirror imaging.

CULTURAL CONTEMPT

A-21. Unlike mirror imaging, commanders and staffs recognize the existence of cultural differences with other actors in an operational environment. The error occurs when commanders and staffs discount those differences, hold them in contempt, or misunderstand these differences. Cultural contempt and misunderstanding is revealed in arrogance. Individuals underestimate the capabilities and motivations of others. The challenge for commanders and staffs is to understand the culture of adversaries, enemies, and unified action partners.

Appendix B

Vignette

This appendix provides an example of framing an operational environment from a systems perspective during an operation. It uses a series of network analysis diagrams to visualize and describe an operational environment. The appendix concludes by describing an operational approach using the diplomatic, information, military, and economic (DIME) construct. The intent of this appendix is to show just one approach employed during Army design methodology (ADM). There are numerous other tools and models available to the commander and planning team for framing operational environments, framing problems, and developing approaches to solve those problems.

INTRODUCTION

B-1. Army forces conduct operations as part of a joint, interdependent team. The joint force commander typically assigns the Army forces an area of operations (AO) large enough for the force to accomplish tasks and protect the force. While responsible for the conduct of operations in their AO, the commander's area of interest expands beyond their area of operation. An *area of interest* is that area of concern to the commander, including the area of influence, areas adjacent thereto, and extending into enemy territory. This area also includes areas occupied by enemy forces who could jeopardize the accomplishment of the mission (JP 3-0).

B-2. An operational environment is not constrained by physical geography. Army commanders, especially at higher echelons (division and above), understand their operational environment from a regional perspective. In operations such as counterdrug, combating terrorism, and counterinsurgency, the enemy acts in ways and in networks that cross nation-state borders. In fact, these networks have a significant influence on the traditional, established nation-state and regional systems. For example, a terrorist network commits terrorist acts in three countries, has a safe haven and base of operations in a fourth country, and receives supplies and other aid from a fifth country.

B-3. In addition to understanding an operational environment, it is important that commanders and staffs consider the capabilities and resources available outside of the command including the capabilities and resources in the joint force and unified action partners. Through collaboration and dialogue, Army forces request support from the joint force commander to help them with accomplishing their mission and recommend actions that help achieve overarching campaign objectives for the joint operation.

FRAMING AN OPERATIONAL ENVIRONMENT

B-4. In this vignette, a division commander directed the G-5 to form a planning team to examine the relationships between the drug trade and the insurgents and to develop options that could disrupt these relationships. While the majority of the insurgent group is located in the division's AO, insurgent elements are located throughout the joint operational area. The insurgents have a strong support base outside the joint operational area in neighboring country X. As such, the commander directed that the planning team expand their analysis beyond the division's AO and take a regional look at the problem. In addition, the commander issued guidance not to restrict options to those that only the division has the ability to execute. The division commander wanted to propose several options to the joint force commander on ways the joint force and interagency organizations help disrupt funding to the insurgents.

B-5. The G-5 assigned a lead planner for this project with members from the G-2, G-3, and G-9 forming the core of the planning team. In addition the G-4 volunteered a captain (a former agent in the Drug Enforcement Agency) to help plan. The hypothetical examples provided in Figures B-1–B-4 on pages B-2– B-4 demonstrate how a planning team can think about actors (individual and organizations), nodes (facilities,

areas, material), and relationships among actors and nodes to help identify potential actions to create a desired end state conditions.

B-6. Figure B-1 represents initial work of the planning team. The team identifies that opium is used as a form of micro finance throughout the AO. Often, farmers (1) take loans, occasionally of goods-in-kind, based on the promise to grow opium and repay the loan with the produced opium. This allows a farmer to get through a particularly harsh winter or obtain particularly expensive things (car, house, wife, etc.). Socially, there is a clear prohibition against the production of illicit narcotics and almost all farmers recognize and agree with the prohibition. However, most opium farmers simply cannot ignore the economic realities of opium farming. In many cases, the opium broker also will run a legitimate business that also deals in opium in the local bazaar (2).

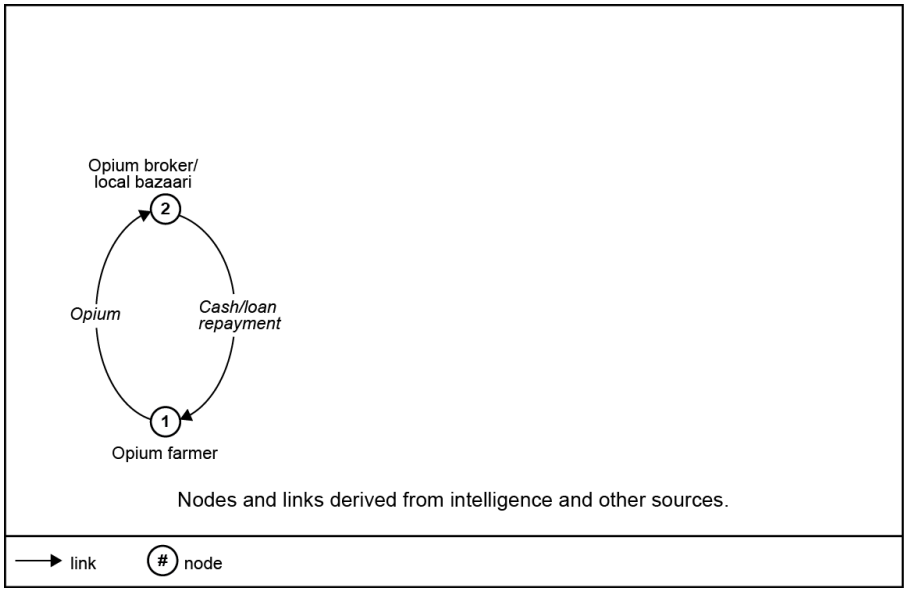


Figure B-1. Network analysis 1

B-7. Figure B-2 on page B-3 represents an expansion of the environmental frame. The former DEA agent explains that the real moneymaking step in the narcotics system is the conversion of opium to heroin and explains the process to the rest of group as he draws on the white board. Opium is valuable as an ingredient of heroin. The opium is converted to heroin in labs (3). The term "lab" means any place the precursors, opium, and chemists are. No sophisticated tools are required. A lab may be a simple hut. Precursor chemicals must be smuggled into country and can be obtained either directly from the smuggling networks (4) or often at local bazaars (2). While there are legitimate uses for many precursor chemicals worldwide, none exists in country. Chemists (5) are the people with the knowledge of how to convert opium into heroin. Another member of the group adds that these are not chemists in any Western sense. Many have no idea about chemistry at all, and may even be illiterate. They do know the recipe to convert opium to heroin, which is a limited skill in the region.

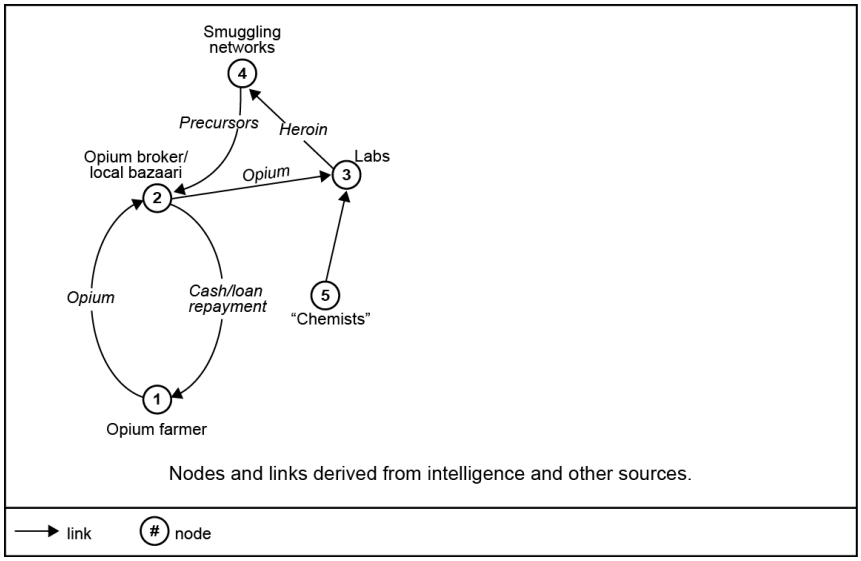


Figure B-2. Network analysis 2

B-8. Based on detailed research from the division's all-source intelligence element, the team further expands their understanding of the operational environment depicted in Figure B-3. The team agrees that there is little narcotics use in country (given the extreme poverty, there would be little profit in that market). Therefore, heroin has to be smuggled to overseas markets (6). Narco-barons (7), typically based in-country, are key individuals who control vast segments of the country's narcotics trade and have access to massive wealth (probably hundreds of millions to billions of U.S. dollars). Many have sizable personal militias. They are the primary profit makers from the sale of narcotics overseas. Haji Bashir Noorzai (currently in U.S. custody awaiting trial in U.S. District Court) was a showcase example of a narco-baron. Their primary means of getting money from the overseas' markets is through banks (8) and the use of the hawala (an informal value transfer system) (9). Narco-barons may also exert direct control over the smuggling networks (4), certain "chemists" (5), the labs (3), and opium brokers (2). Additionally, by using their immense wealth, narco-barons obtain political protection from local and national politicians (10).

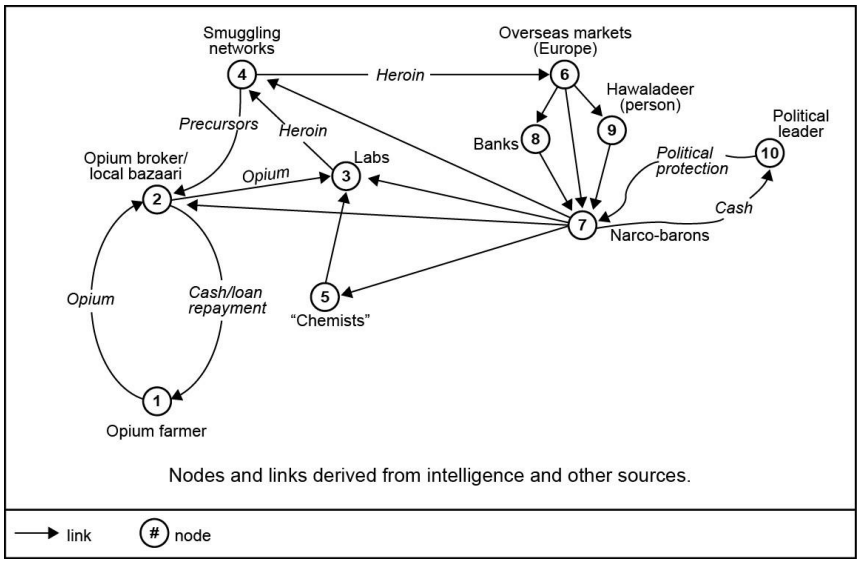


Figure B-3. Network analysis 3

B-9. Figure B-4 represents the teams work in establishing the relationships among the insurgents and the drug trade. Current intelligence supports the conclusion that the Taliban [the insurgents (11)] benefits indirectly from the narcotics trade. The Taliban almost certainly obtains funds by "taxing" farmers (1) and

opium brokers (2) in areas where it has a strong presence. The Taliban also probably receives sizeable contributions from narco-barons (7). This may be a form of protection payments, but narco-barons may also seek to perpetuate the lack of enforcement enabled by the continuing instability created by Taliban operations. Also, the same smuggling networks (4) responsible for moving narcotics out of country also are likely responsible for the "backflow" movement of arms and personnel into country, directly benefiting the Taliban.

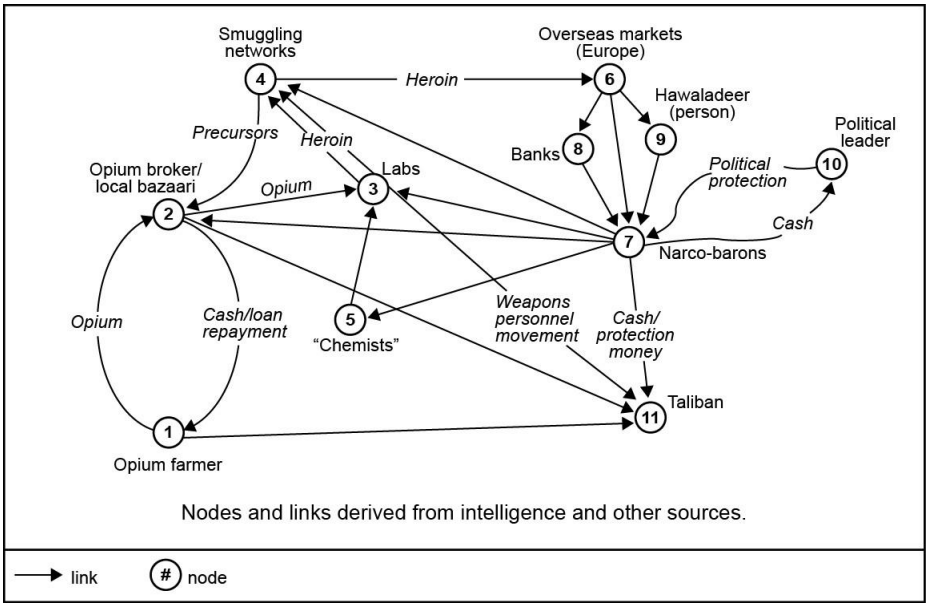


Figure B-4. Network analysis 4

IDENTIFYING PROBLEMS AND DEVELOPING OPTIONS

B-10. As the planning team refines its understanding of the narcotics network, it shifts its efforts to understanding the problem and developing options to considering how to disrupt the relationship among the insurgents and the drug trade. During a discussion, the team concludes that the nodes and links directly related to the conversion of opium to heroin are important, and that the labs and their chemists are key to the entire system. Perhaps opium could be smuggled out of country and the conversion could occur at labs in other countries. This is much more difficult for the opium brokers, and severely reduces the profitability of narcotics in country. Since the conversion occurs in the labs, attacking them directly could affect the entire system. These makeshift labs are transient (where the right people and material are present for brief periods), and may be too difficult to identify and interdict.

B-11. Figure B-5 represents areas friendly actions can affect the ability of the labs to convert opium to heroin. The team identifies three factors that could limit lab operations. First, the division works with host nation security forces to interdict the supply of opium (1) and (2) to the labs. Second, interdict the opium farms and brokers impacts labs. Third, the knowledge of how to convert opium to heroin is limited to the chemists, so identifying, locating, and confining a sufficient number of chemists (5) should have a huge impact on labs. Success in these three areas should limit heroin production and movement overseas, reduce the amount available in overseas markets, and reduce or eliminate the flow of money to the Taliban from the sale of narcotics. The G-2 planner also assessed that the given the wide-ranging influence the narco-barons (7) exert on the narcotics trade, interdicting them directly also is likely to have a significant impact on the system. Since the labs and the chemists are commonly co-located and vital to the production of heroin, the team designates them as key nodes in the network.

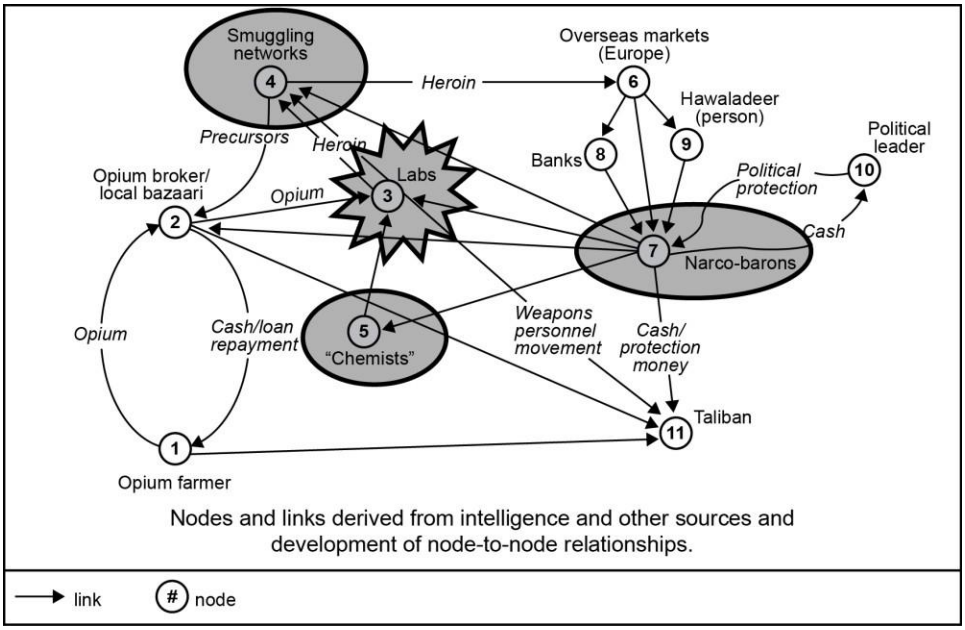


Figure B-5. Network analysis 5

B-12. Based on their environmental frame, the team realizes that while the division takes action on parts of the narcotics network, many areas require the capabilities of the joint force, interagency organizations, and the host nation. As such, the team decides to develop broad options by considering potential DIME actions that influence the narcotics network. Figure B-6 represents recommend action by DIME.

- **Diplomatic**. Apply pressure against political leaders (10) to cease their political protection of narco-barons and share information with international banks (8).
- **Informational**. Target opium farmers (1) with messages to influence them to accept alternative income for the opium crop.
- **Military**. Capture and arrest narco-barons (7); capture chemists (5) and destroy labs (3); interdict smuggling networks (4) to cut flow of precursors.
- **Economic**. Freeze narco-barons' assets at international banks (8) and work with host country to provide economic alternatives for opium farmers (1).

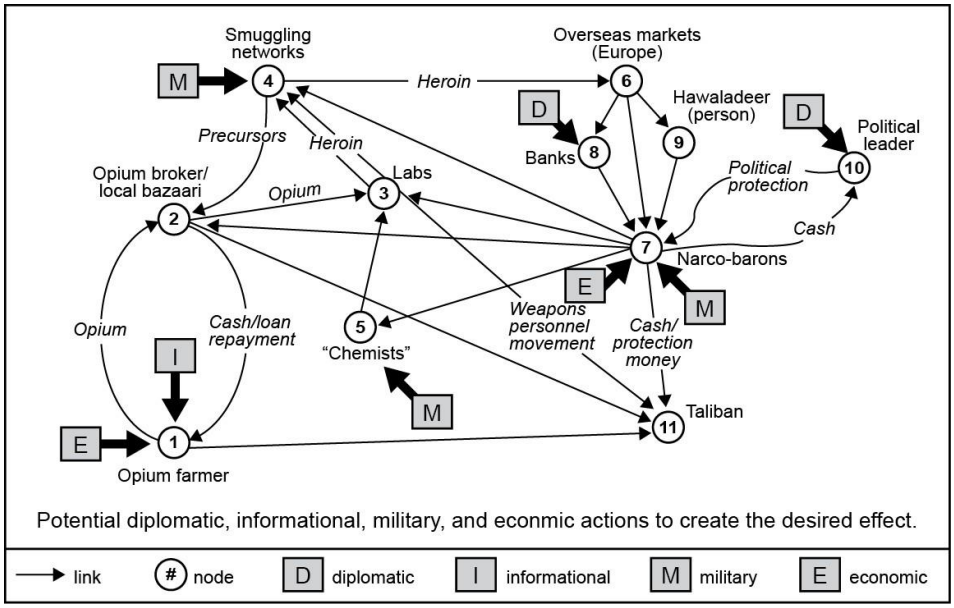


Figure B-6. Network analysis 6

Source Notes

These are the sources used, quoted, or paraphrased in this publication. They are listed by source note number.

Source note 1 **The Black Swan: The Impact of the Highly Improbable**: Nassim Nicholas Taleb. Random House, New York, 2007, 63-64.

Source note 2 **Organizational Learning: A Theory of Action Perspective:** Chris Argyris and Donald Schon. Addison-Wesley, Reading, MA 1978. 8-9.

Source note 3 **Thinker's Guide Library. Critical Thinking Concepts & Tools**: Richard Paul and Linda Elder. The Foundation for Critical Thinking Press, Tomales, CA. 2009, 2.

Source note 4 **Thinking, Fast and Slow**: Daniel Kahneman. Farrar, Strauss and Giroux, New York, 2011, 11-30.

Source note 5 **Thinking Critically about Critical Thinking: A Fundamental Guide for Strategic Leaders.** Colonel (Retired) Stephen J. Gerras, Ph.D. Professor of Behavioral Sciences. Department of Command, Leadership, & Management, U.S. Army War College, August 2008, 14-24.

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Glossary

SECTION I – ACRONYMS AND ABBREVIATIONS

ADM	Army design methodology
ADRP	Army doctrine reference publication
ADP	Army doctrine publication
ATP	Army technical publication
AO	area of operations
DIME	diplomatic, information, military, and economic
FM	field manual
IPB	intelligence preparation of the battlefield
JP	joint publication
MDMP	military decisionmaking process
MOE	measures of effectiveness
MOP	measures of performance
PMESII-PT	political, military, economic, social, information, infrastructure, physical environment, and time

SECTION II – TERMS

area of interest

That area of concern to the commander, including the area of influence, areas adjacent thereto, and extending into enemy territory. This area also includes areas occupied by enemy forces who could jeopardize the accomplishment of the mission. (JP 3-0)

assessment

Determination of the progress toward accomplishing a task, creating a condition, or achieving an objective. (JP 3-0)

assumption

A supposition on the current situation or a presupposition on the future course of events, either or both assumed to be true in the absence of positive proof, necessary to enable the commander in the process of planning to complete an estimate of the situation and make a decision on the course of action. (JP 5-0)

center of gravity

The source of power that provides moral or physical strength, freedom of action, or will to act. (JP 5-0)

course of action

A scheme developed to accomplish a mission. (JP 5-0)

culminating point

That point in time and space at which a force no longer possesses the capability to continue its current form of operations. (ADRP 3-0)

decisive point

A geographic place, specific key event, critical factor, or function that, when acted upon, allows commanders to gain a marked advantage over an adversary or contribute materially to achieving success. (JP 5-0)

defeat mechanism

The method through which friendly forces accomplish their mission against enemy opposition. (ADRP 3-0)

evaluating

Using criteria to judge progress toward desired conditions and determining why the current degree of progress exists. (ADRP 5-0)

line of effort

A line that links multiple tasks using the logic of purpose rather than geographical reference to focus efforts toward establishing operational and strategic conditions. (ADRP 3-0)

line of operations

A line that defines the directional orientation of a force in time and space in relation to the enemy and that links the force with its base of operations and objectives. (ADRP 3-0)

mission command

The exercise of authority and direction by the commander using mission orders to enable disciplined initiative within the commander's intent to empower agile and adaptive leaders in the conduct of unified land operations. (ADP 6-0)

monitoring

Continuous observation of those conditions relevant to the current operation. (ADRP 5-0)

operational approach

A description of the broad actions the force must take to transform current conditions into those desired at end state. (JP 5-0)

operational art

The cognitive approach by commanders and staffs—supported by their skill, knowledge, experience, creativity, and judgment—to develop strategies, campaigns, and operations to organize and employ military forces by integrating ends, ways, and means. (JP 3-0)

operational environment

A composite of the conditions, circumstances, and influences that affect the employment of capabilities and bear on the decisions of the commander. (JP 3-0)

operations process

The major mission command activities performed during operations: planning, preparing, executing, and continuously assessing the operation. (ADP 5-0)

phase

A planning and execution tool used to divide an operation in duration or activity. (ADRP 3-0)

planning

The art and science of understanding a situation, envisioning a desired future, and laying out effective ways of bringing that future about. (ADP 5-0)

stability mechanism

The primary method through which friendly forces affect civilians in order to attain conditions that support establishing a lasting, stable peace. (ADRP 3-0)

tempo

The relative speed and rhythm of military operations over time with respect to the enemy. (ADRP 3-0)

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