



# ARMY PLANNING DOCTRINE: Identifying the Problem is the Heart of the Problem

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**I**N 1968, U.S. Army Field Manual (FM) 101-5, *Staff Officers' Field Manual: Staff Organization and Procedure*, established problem solving as the bedrock of Army doctrine.<sup>1</sup> In all subsequent versions of FM 101-5, its successor FM 5-0, *Army Planning and Orders Production*, and a wide range of other doctrine manuals, writers consistently framed professional competence in terms of solving problems. Military as well as civilian problem-solving models share one core concept—the first step is to identify the problem.<sup>2</sup> Yet, neither Army doctrine nor professional military education curricula offer a problem-structuring methodology. Thus, for over three decades we have based our military doctrine on the indispensable capacity to solve problems, but without a clear method to satisfy the first requirement: how to synthesize critical facts and relationships into a problem statement that can guide planning and decision-making. To fill the gap in Army doctrine, this article offers a teachable problem-identification method.

## A Few Basics

In any discussion of problem identification, a definition or common reference point is helpful for two key terms: *problem* and *factor*. According to doctrine, a problem is well structured when all necessary information is available and a verifiable answer can be determined. A problem is medium-structured when some information is available and routine solutions are insufficient. Ill-structured problems require information that is missing and have no verifiable solution.<sup>3</sup>

Donald Schön also stratifies problems, but into two types: messy and hard.<sup>4</sup> Like doctrine's ill-structured problem, messy problems defy direct solutions; they require continuing interplay between problem solvers in "processes that are ever changing in form" while "decisions made at any stage will tend to alter the configuration of future choices to be addressed."<sup>5</sup> Establishing democratic government structures in a failed state is one example of a messy or ill-structured problem. Hard problems, on the other hand, can be solved through persistent and dedicated efforts, such as by preparing a joint task force movement order. The premise in this article is that capabilities to deal with messy or ill-structured problems subsume abilities to solve less difficult problems.

There is no definition in problem-solving doctrine for the term "factor." However, discussion points to "a component of the environment that can be observed, measured, and applied to achieve (or prevent) an effect."<sup>6</sup> This definition is

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consistent with nonmilitary definitions of “factor” as “a variable that can assume a wide range of values.”<sup>7</sup> Time-distance, terrain, weather, civil considerations, and forces available are among the factors commonly used in identifying military problems.

## Overview of Problem Solving and Army Doctrine

This section traces Army doctrine for planning and decision making. The sources describe an ongoing commitment to a deductive approach for analytical problem solving to identify solutions to difficult problems. Across a period of 38 years, there were 3 perceptible shifts:

- Adoption of problem solving as the preferred approach to planning.
- A change in focus from the commander’s estimate to staff estimates as the centerpiece of planning activity.
- A return to the commander as the focal point in problem-based planning.

**Benchmark 1.** The year 1968 serves as a benchmark for the union of planning and problem solving. Doctrine writers discussed decision-making as a nine-step process designed to move from receipt of a new mission through the preparation, approval, and supervision of plans and orders. All nine steps focused on the five-paragraph commander’s estimate of the situation, the primary mechanism for mission analysis and course of action development. “Military problem solving techniques” defined the commander’s estimate as “a problem solving process to find the best way to accomplish a given mission.”<sup>8</sup> Writers stipulated that the first step in decision-making was to recognize the problem.<sup>9</sup> In regard to identifying the problem, paragraph 2 of the commander’s estimate (the situation and courses of action) offered guidelines for two actions. The first action focused on identifying facts and assumptions related to the situation. The second focused on listing “significant difficulties or difficulty patterns” that could work against accomplishing the mission.<sup>10</sup>

Over three decades, writers worked on the margins, leaving problem solving and the commander’s estimate at the core of planning doctrine. In a 1972 revision of FM 101-5, writers expanded the first step in problem solving from “recognizing the problem” to “recognizing and defining the problem.”<sup>11</sup> A 1984 update framed military decisions around problem

solving. In tactical decisions, writers modeled the Military Decision-Making Process (MDMP) as an ongoing set of steps to orchestrate commander and staff activities. The MDMP mirrored the nine-step problem-solving approach of 1968, but added a tenth step: “mission accomplished.”<sup>12</sup> In the portion of the commander’s estimate dealing with the situation and courses of action, guidelines pointed commanders to consider “facts of the situation that will influence friendly and enemy actions and, therefore, may influence the choice of action.”<sup>13</sup> Examples included unit compositions, significant activities, weather, terrain, political, and economic factors.<sup>14</sup> Through the 1984 version of FM 101-5, the commander’s estimate was the primary mechanism to identify and solve problems. Staff estimates were important, but occupied a clearly defined supporting role.

**Benchmark 2.** In a 1997 revision, doctrine writers established a second benchmark in the union of planning and problem solving. In describing the MDMP as an adaptation of analytical problem solving, writers defined the tactical problem as a “result of mission analysis.”<sup>15</sup> Rather than highlighting the commander’s estimate, the MDMP was more a checklist of “inputs and outputs” assigned to each of the seven MDMP steps. Interestingly, the tactical problem was a result—but not an output—of mission analysis. Instead of describing the five-paragraph commander’s estimate with a discussion of problem identification considerations, writers reduced the commander’s estimate to a focus on “assessing the intangibles of training, leadership and morale, and results in a decision.”<sup>16</sup> Writers admonished staff officers, rather than commanders, to determine “exactly what the problem is and precisely and clearly define the problem’s scope and limitations.”<sup>17</sup>

In 2005, FM 5-0, *Army Planning and Orders Production*, replaced FM 101-5 as the primary planning and problem-solving reference. It discussed problem solving as a systemic activity applicable to “all Army activities, not just operations.”<sup>18</sup> The problem-solving model consisted of seven steps with problem identification at the top of the list. In connecting problem solving to planning, writers described the seven-step MDMP as an analytical planning process and “an adaptation of Army problem solving.”<sup>19</sup> A capacity to solve tactical problems constituted the “foundation of effective planning.”<sup>20</sup>

FM 5-0 first described the problem solver in terms of his (or her) ability to reason critically, state a problem clearly, work in an orderly manner, seek information diligently, identify and apply criteria reasonably, focus on the problem at hand, and be precise.<sup>21</sup> The manual highlighted important factors for tactical problems in terms of mission, enemy, terrain and weather, troops and support, time-distance, and civil considerations (METT-TC).<sup>22</sup> In step-by-step directions, writers outlined six primary tasks that set the conditions for the planner-problem solver to develop a plan to solve the problem:<sup>23</sup>

1. Compare the current situation to the desired end state.
2. Define the problem's scope or boundaries.
3. Answer the following questions—
  - a. Whom does the problem affect?
  - b. What is affected?
  - c. When did the problem occur?
  - d. Where is the problem?
  - e. Why did the problem occur?
4. Determine the cause of obstacles between here and the solution.
5. Write a draft problem statement.
6. Redefine the problem as new information is acquired and assessed.

**Benchmark 3.** The third benchmark in the union of planning and problem solving occurred in March 2006. Previously, doctrine writers tended to compartmentalize large parts of discussions concerning a) analytical problem solving and b) analytical planning. Now, they linked the two, and in the process highlighted the importance of identifying problems in relation to developing and selecting a course of action. In Field Manual (Interim) 5-0.1, *The Operations Process* (2006), writers addressed problem statements in terms of a) a commander's visualization and b) a source for criteria to evaluate success in achieving the commander's intent.<sup>24</sup> According to FMI 5-0.1, the visualization process begins with situational awareness when the planner (the problem solver) frames the important factors in order to set parameters for in-depth analysis. Upon achieving situational understanding, the planner frames a description of the relationships between and among the important factors in order to "determine the implications of what is happening and [to] forecast what may happen."<sup>25</sup> This

two-frame process is consistent with the analytical problem-solving goal to "ensure that all key factors relevant to the problem are considered and that all relationships between variables are anticipated and accounted for in the solution."<sup>26</sup>

This is where Army problem-solving doctrine stands today. Once again it embraces the commander's role as planner-problem solver. At no point in doctrine do we find even a hint that problem solving is anything short of a baseline professional competency for Army officers. While the journey from 1968 to now has shown much progress, doctrine still does not provide a method to identify tactical problems.

Discussions in pre-1997 versions of FM 101-5 hinted at important considerations such as "significant difficulties or difficulty patterns" that could work against mission accomplishment.<sup>27</sup> Revisions in 1997 and 2005 provided instructions to identify a problem, but in a bit of circular reasoning these instructions used the problem as the means to identify a problem.<sup>28</sup> In the final analysis, the problem remains: How do we identify a tactical problem?

## A Teachable Method to Identify Problems

Army doctrine can serve as a foundation for a three-step procedure to identify tactical problems and produce a problem statement. I define a *problem statement* as "an approximately 130-word synthesis of critical facts and relationships and the important factors or variables that shape an operational environment in such a way that cause-and-effect relationships point to leverage points that bring competitive advantage to friendly forces." A problem statement is a guide to planning and decision making.

**Step 1.** The first step in identifying a tactical problem is to analyze the operational environment in order to reach conclusions from facts related to the following variables:

- Context.
- Capabilities.
- Structure.
- Time.

The analysis should follow a systematic framework such as METT-TC or other analytic lens.

*Context.* By definition, context establishes the foundation for rational decision-making and purposeful activity. Context deals with concrete

factors like topography and geography as well as political, economic, social, and cultural variables and values-based beliefs. In problem solving, each factor and variable has its value as well as a more complex value under analysis in an interdependent, competitive situation.<sup>29</sup> We can frame a mission-analysis question to deal with context: “What conditions must friendly and enemy forces establish and prevent?”

*Capabilities.* Capabilities constitute a capacity to influence or achieve specified conditions. Capabilities are the basis of planning that links ways and means to ends. We can also frame a mission-analysis question to deal with capabilities: “What are the friendly and enemy forces available to cause an outcome?”

*Structure.* Structure refers to the arrangement of friendly and enemy forces as well as other government and non-government actors within a given context. Structure is physical reality and a driver for a commander’s visualization, which is the means to assess an operation from inception through end-state. A mission-analysis question related to friendly and enemy structure might be: “How do units fit or relate to each other from the perspectives of command, control, and objectives?”

These context, capability, and structure questions are exemplary. Commanders and staffs may develop complementary questions to generate information for a specific situation.

**Step 2.** The second step in identifying a tactical problem is to describe the operational environment in terms of—

- Height.
- Width.
- Depth.
- Time.

This description helps us to understand the maneuver relationships that friendly and enemy forces must establish and prevent.

Height, width, and depth factors are spatial variables. *Height* describes a vertical or perpendicular extension of the operational environment. Height areas of interest include communications, visibility, and air space. *Width* is a lateral or breadth consideration. Width areas of interest include maneuver corridors, roads, and bodies of water. *Depth* is a horizontal dimension that is at right angles to width and height. Depth areas of interest include

movement formations, fire control, and an area of operations. Height, width, and depth constitute three physical coordinates of a particular activity or event.

In a tactical problem, *time* is the fourth coordinate. It is a variable with three potential values.<sup>30</sup> First, time has a component of discrete values such as seconds, minutes, or hours to account for events that must occur within a precise period as well as events that must occur sooner or later than a given moment. The discrete component functions around specific “counts.” Second, time has a component of periods, seasons, or cycles to account for clumps of similar activities or characteristics. The clumps component functions around themes and continuity. Finally, time has a spatial component, such as “before” and “after,” to account for relationships between objects or entities. The spatial component functions around velocity, the rate of movement of the organization as a whole toward an objective or end state. A problem statement may incorporate all time components, but must incorporate a minimum of one time factor.

**Step 3.** The third step in identifying a tactical problem is to calculate the time-distance factors of combatants as well as interagency actors, neutrals, and other entities in relation to objectives or key terrain in order to understand which defeat mechanisms and/or stability mechanisms favor friendly forces.<sup>31</sup>

Time-distance calculations are basic computations based on a known distance covered at a constant speed in a specified direction. Their yield is “elapsed time.” By definition, ratios represent a comparison of two values. In a problem statement, we can express a ratio as a relation between factors such as momentum (movement toward a desired outcome); velocity (speed and direction of the entire force); or reaction cycles (elapsed time from observation to effective response). If the resulting ratio favors friendly forces, the ratio must be protected. If the resulting ratio favors enemy forces, we must calculate a second ratio that sets conditions favorable to friendly forces. Part of the problem becomes changing the ratios to achieve the favorable conditions.

A problem statement is the key output from mission analysis rather than a shortcut en route to a course of action. A problem statement has two

components. In the first component, planners define conditions that must be established or prevented. Planners describe conditions in sentences that address structure of forces involved, time-distance measurements, and time-based relationships such as “before” or “after.” The second component of the problem statement consists of critical planning factors that affect course-of-action development and analysis and decision-making.

While developing a problem statement requires an investment of time and effort, the effectiveness dividend is a fact-based explanation of the mission in terms of relationships, patterns, and critical tasks. The problem statement’s efficiency payoff comes in time saved when developing all other mission analysis outputs such as planning guidance, information requirements, and commander’s intent.

## Developing a Problem Statement: An Example

So how do we develop a problem statement? An historical example, Custer at Little Bighorn, should help illuminate the process. My intent is to frame the situation from General Custer’s perspective on the morning of 25 June 1875 before he initiated a course of action. The facts come from multiple historical accounts that incorporate some assumptions and inferences. First, I will list relevant information drawn from the accounts for each of the three steps discussed above. Second, I will present a statement of General Custer’s tactical problem as a synthesis of facts that he could have derived from a mission analysis.

**Step 1.** The first step deals with conclusions related to the context, capabilities, and structure of friendly and enemy forces.

*Context.* With regard to context, sources indicate that having lost the element of surprise, Custer’s cavalry units needed to approach the Indian’s village with stealth in order to prevent the occupants from moving to escape or fight.<sup>32</sup> Custer’s units had to move at midday under clear visibility across low rolling hills and through tall grass with Indian scouting parties deployed throughout the area of operations. The Little Bighorn River valley appeared relatively open and flat. On the other hand, ravines and streams compartmented the area of operations as a whole.<sup>33</sup>

*Capabilities.* Custer’s command consisted of about 650 soldiers, scouts, and guides armed with

breech-loading carbines but no artillery support.<sup>34</sup> On the opposing side, an estimated 1,500 warriors carried a mix of firearms along with traditional Indian weapons.<sup>35</sup>

*Structure.* Custer’s cavalry regiment consisted of 12 companies with established command and control suited for tailored task-organization options.<sup>36</sup> In contrast, the Indian tribes were a loosely affiliated coalition organized more around a warrior society code of bravery in the face of danger.<sup>37</sup>

**Step 2.** The second step considers height, width, and depth factors in the operational environment over time in order to comprehend the maneuver relationships friendly and enemy forces must establish and prevent.

*Height.* Low rolling hills dominated the area.<sup>38</sup> Due to the absence of clouds and full sun, visibility allowed observation of a moving force at a distance of perhaps six miles or more throughout much of the area.<sup>39</sup>

*Width* ranged from about one-quarter to one-half mile along the Reno Creek to approximately one-half to one mile in the Little Bighorn River valley, to one-half mile or less on high ground east of the Little Bighorn River valley.<sup>40</sup>

*Depth.* Approximately 16 miles separated the cavalry from the suspected Indian village. The cavalry initially moved along a creek bed (Reno Creek) for about 13 miles to the Little Bighorn River. After crossing the river, a move of just over two miles, more or less, remained to the Indian village.<sup>41</sup>

*Time.* From a spatial perspective, the cavalry had to control the Little Bighorn River valley before the Indians detected movement and reacted to escape or fight. Additionally, U.S. reinforcements had to move along exterior lines to assist cavalry units in contact before the Indians could mass forces along interior lines.

**Step 3.** In step three, the planner calculates time-distance factors of friendly and enemy forces in relation to objectives or key terrain in order to understand the defeat mechanisms that favor friendly forces. The distance from the start point at Reno Creek to the expected line of contact at the Little Big Horn River was about 13 miles. If the leading cavalry units crossed the line of contact before being detected, they had the speed to keep the Indians from reacting effectively. If detected east of the line of contact, the cavalry units had to





destroy the Indians' command and control and any organized resistance in less than 30 minutes.<sup>42</sup>

After gathering and analyzing information, the next action is to synthesize findings and conclusions into a statement of the tactical problem. The following problem statement of approximately 130 words synthesizes the facts related to Custer's attack:

**Problem:** How to move 600 troopers in 12 companies about 15 miles along a creek bed to disintegrate a coalition of 1,500 mounted warriors before the Indians with interior lines can react to escape or fight. Detection east of the river requires hastened contact to control the village in less than 30 minutes.<sup>43</sup>

**Critical Planning Factors:**

- Maneuver space in the Little Bighorn River valley up to one mile in width; visibility of six miles or more, low hills, ravines, and tall grass shape the area. Movement causes a dust plume.
- Regiment moves at midday and must reinforce units in contact along exterior lines.
- Regiment must conduct an in-stride river crossing.
- Indian arms include repeating rifles; scouting parties are working throughout the area.

## Conclusions and Recommendations

Problem identification is a professional competency that applies across the full spectrum of

military operations. Since the late 19th century, the U.S. Army Command and General Staff College has followed a problem-solving approach to instruction. But instruction focused on building expertise in the MDMP does not develop competence in identifying tactical problems. In order to fill the gap, Army doctrine and officer education should emphasize how to—

- Analyze the operational environment to grasp facts related to the variables of context, capabilities, and structure.
- Analyze height, width, depth, and time factors to understand maneuver relationships that friendly forces must establish and prevent.
- Assess time-space factors to understand the defeat mechanisms that favor friendly forces.
- Summarize conclusions developed during analysis and assessments in order to develop a statement of the tactical problem that will guide planning and decision making.
- Write cogent problem statements based on structured analysis that produces findings and conclusions concerning critical relationships between and among the important factors of a given situation.

For 30 years, analytical planning has been important to Army doctrine, but doctrine writers have neglected to define how to meet the first requirement in analytical planning: identifying the tactical problem. If we are to make good use of what we know, doctrine writers, curriculum developers, and

Army educators must realize that merely hoping MDMP exercises will somehow lead to competent problem identification simply is not prudent. We can only gain by instituting a systematic, workable problem identification process. As inventor Charles

Kettering has said, “A problem well stated is a problem half solved.”

The all-important first step of developing a method to identify a problem is now behind us. The path to problem-solving competency is open. **MR**

PHOTO: (previous page) Column of cavalry, artillery, and wagons, commanded by General George A. Custer, crossing the plains of Dakota Territory. By W.H. Illingworth, 1874 Black Hills expedition. (NARA)

## NOTES

1. U.S. Army Field Manual (FM) 101-5, *Staff Officers Field Manual: Staff Organization and Procedure* (Washington, DC: Government Printing Office [GPO], June 1968), 6-1.

2. For civilian sources on problem structuring, refer to Raymond McLeod Jr., Jack William Jones, and Carol Sanders, “The Difficulty in Solving Strategic Problems: The Experiences of Three CIOs,” *Business Horizons* (January/February, 1995), 28-38; Henry Mintzberg, Duru Raisinghani, and André Théorêt, “The Structure of ‘Unstructured’ Decision Processes,” *Administrative Science Quarterly* 21 (June, 1976): 246-275; Jonathan Rosenhead and John Mingers, eds., *Rational Analysis for a Problematic World Revisited: Problem Structuring Methods for Complexity, Uncertainty, and Conflict*, 2d ed. (New York: Wiley, 2001).

3. FM 5-0, *Army Planning and Orders Production* (Washington, DC: GPO, January 2005), 2-5.

4. Donald Schön, “The New Scholarship Requires a New Epistemology,” *Change* (November-December 1995): 26-34. For additional insight into problems, see Russell L. Ackoff, *Redesigning the Future: A Systems Approach to Societal Problems*, (New York: John Wiley, 1974), 21; Donald Schön, *Educating the Reflective Practitioner* (San Francisco, CA: Jossey-Bass, 1990), 324.

5. Jonathan Friend, “Supporting Developmental Decision Processes: The Evolution of an OR Approach,” *International Transactions in Operational Research* 2, 3, 225.

6. FM 5-0, 2-2.

7. L. R. Gay, *Educational Research: Competencies for Analysis and Application*, 5th ed. (Upper Saddle River, NJ: Prentice Hall, 1996), 627.

8. FM 101-5 (1968), 6-1.

9. *Ibid.*, 6-1.

10. *Ibid.*, 6-3.

11. FM 101-5 (July 1972), 5-1.

12. FM 101-5 (May 1984), 5-6.

13. *Ibid.*, E-2.

14. *Ibid.*, E-3.

15. FM 101-5, *Staff Organization and Operations* (May 1997), 5-1, 5-5.

16. *Ibid.*, C-2.

17. *Ibid.*, D-1.

18. FM 5-0, 2-1.

19. *Ibid.*, 3-1.

20. *Ibid.*, 1-12.

21. *Ibid.*, 2-4, 2-5.

22. *Ibid.*, 1-7, 1-11; FM 3-0, *Operations* (Washington, DC: GPO, June 2001), 5-36.

23. *Ibid.*, 2-7.

24. Field Manual Interim (FMI) 5-0.1, *The Operations Process* (Washington, DC: GPO, March 2006), 5-2.

25. *Ibid.*, 1-20.

26. *Ibid.*, 2-2.

27. FM 101-5 (1968), 6-3.

28. FM 101-5 (1997), D-1 and FM 5-0, 2-7.

29. Walter J.M. Kickert, “Autopoiesis and the Science of (Public) Administration: Essence, Sense and Nonsense,” *Organization Studies* 14, no. 2 (1993): 261-264.

30. Discussion of time is based on ideas and principles in Henri Bergson, *Time and Free Will: An Essay on the Immediate Data of Consciousness*, trans. F. L. Pogson (London: George Allen and Company, 1913); Henri Bergson, *The Creative Mind*, trans. Mabelle L. Andison (New York: Philosophical Library, 1946); T. K. Das, “Time: The Hidden Dimension in Strategic Planning,” *Long Range Planning* 24, no. 3 (1991): 49-56; Peg Thoms and David Greenberger, “The Relationship Between Leadership and Time Orientation,” *Journal of Management Inquiry* 4, no. 3 (1995), 272-291; Robert R. Leonhard, *Fighting by Minutes: Time and the Art of War* (Westport, CT: Praeger Publishers, 1994); Donald M. Lowe, *History of Bourgeois Perception* (Chicago: University of Chicago Press).

31. *Army Comprehensive Guide to Modularity*, version 1.0 (Fort Monroe, VA: U.S. Army Training and Doctrine Command, 2004), 6-6—6-9. Defeat mechanisms are also discussed in Jack D. Kem, *Campaign Planning: Tools of the Trade* (U.S. Army Command and General Staff College: Department of Joint and Multinational Operations, 2005), 27.

32. Dennis K. Clark, “Surprise At the Little Bighorn,” *10th Annual Symposium Custer Battlefield Historical & Museum Association, Inc.*, June 1996, 41-42.

33. Robert M. Utley, *Little Bighorn Battlefield: A History and Guide to the Battle of the Little Bighorn* (Washington, DC: U.S. Department of the Interior, 1994), 48; Bruce R. Liddic, *Vanishing Victory: Custer’s Final March* (El Segundo, CA: Upton & Sons, 2004), 34.

34. John S. Gray, *Centennial Campaign: The Sioux War of 1876* (Norman, OK: University of Oklahoma Press, 1988), 145-151.

35. John M. Carroll, *Cyclorama of General Custer’s Last Fight* (El Segundo, CA: Upton and Sons, 1988), 35; Thomas B. Marquis, *Custer on the Little Bighorn* (Lodi, CA: End-Kian Publishing, 1967), 6.

36. Dennis “DK” Clark, “Following the Guidon’s Trail,” *16th Annual Symposium Custer Battlefield Historical & Museum Association, Inc.*, June 2002, 41-46, 54.

37. Utley, 52. Dennis “DK” Clark, personal correspondence, 20 October 2006, described the Indians’ approach to command and control in terms of a loose alliance that followed a warrior code of bravery.

38. *Ibid.* Clark noted that bluffs of up to 300 feet framed the east side of the Little Bighorn River Valley, a critical fact that Custer did not know until later in the day because Sharp Shooter’s Ridge blocked his view in the morning.

39. Utley, 51; Marquis, 41.

40. Utley, 44.

41. Liddic, 52; Utley, 64-65; David C. Gompert and Richard L. Kugler, “Custer in Cyberspace,” *Defense Horizons*, February 2006, 6.

42. Utley, 51-53.

43. Clark. Dennis “DK” Clark confirmed this calculation based on Custer’s previous experience with the Hancock expedition, when an Indian village escaped because contact was not made until approximately an hour after detection.