



Difficult Missions

What Logic to Apply and What Action to Take

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SOME MISSION ASSIGNMENTS are more complex than what at first meets the eye. The great nuclear physicist Albert Einstein once said, “If I were given one hour to save the planet, I would spend 59 minutes defining the problem and one minute resolving it.” In my experience in government and the military, I have seen an inclination to reverse those proportions. Of these two very different activities, less is understood about making the important choices of logic that *govern* choices available for action.

The Nature of the Problem

As Albert Einstein reminds us here, a “problem” is a conceptual construction in our minds, not the objective reality of a difficult and dangerous situation that exists in nature. How we understand that situation after giving the available evidence some thought is what is important. Many situations, especially those involving ample human interaction, will always elude full understanding because of interactively complex dynamics. As soon as we think we grasp some essential nature, it changes, and when such situations suggest improvement, even experts will have difficulty deciding what the “problem” is, even though non-experts can agree that things are getting worse and not better.

Future mission decision makers, at all levels of command, will confront “dynamic” and “interactive” complexity regularly in the mission situations they will face. This flux is the more problematic complexity of nonlinear social behaviors over time—subtle relationships among cause, effect, and constant unpredictable interactions. Displacing one regime and installing another entails such problems. So does forcing peace on warring factions, as in El Salvador, Grenada, Panama, Haiti, Bosnia, Somalia, some others before 9/11, and all other operations since. Even the response to Hurricane Katrina presented such a problem. Because of the desert setting of most of the combat in the First Gulf War, this was the least complex, and least typical, of the likely missions on the road ahead. None of them was anticipated even a year in advance. Army long-range planners and their political leaders had their eyes elsewhere, which really cannot be helped given the complexity of global humanity. Such surprises are historically normal.

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PHOTO: U.S. Army CPL Joaquin Viera, left, and SGT James Robertson engage targets while dismounting a vehicle on a range at Camp Fallujah, Iraq, 21 October 2010. (DOD, PFC Gary Silverman, U.S. Army)

Problem Solving

Success in difficult military missions in which the mission problems are not self-evident, even to experts, involves rigorously applying the logic of all four sequential steps of the traditional problem solving process:

- Structuring or framing the problem, that is, making sense conceptually of the situation we are asked to improve.

- Developing a conceptual solution strategy based on the frame. This may be as simple as taking advantage of the tendencies that are already making it “better” and blocking and mitigating those making it “worse.”

- Formulating and executing the tactical solution of concrete ends, ways, and means. Deciding on and implementing concrete ways and means in acting to produce outcomes the strategy predicts will lead toward solving the problem. Such problems are situations that have become intolerable and must be improved to become tolerable enough for the mission to end.

- Learning appropriate information from execution attempts to adapt both the tactics of concrete ends, ways, and means, and the strategy of *conceptual* ends, ways, and means.

Time invested in the first two conceptual steps will avert wasting time and effort on useless or even counterproductive concrete missions that solve the wrong problem. Paying attention to the last step leads to steady improvement of the mission situation. Unfortunately, this reasonable advice is more often not heeded in practice. Applying all four steps equally rigorously will be particularly important because little will be known beforehand about adversaries and how they might fight.

Interactions with the press and local publics have become more dynamic and crucial to military success. Winning and keeping coalition partners also introduce new structural dynamics. Many systemic tensions, actors, and variables in modern mission environments are *initially suppressed*, thus unknowable in advance of operations. Intolerable situations arise in unexpected places to force political



(U.S. Air Force, TSgt Francisco V. Govea, II)

Members of the Afghan media interview U.S. Army GEN Stanley McChrystal, commander of the International Security Assistance Force, during his visit to the Friendship Gate border crossing, 18 January 2010, Spin Boldak, Afghanistan.

leaders to “do something,” acting to satisfy political imperatives at home. As we have seen, they do so without fully understanding what can be done, and how, or even by whom.

Once a military intervention is launched to address a problem framed by the highest echelons, the situation evolves rapidly, particularly as these suppressed systemic factors are released. Military echelons above the company level are just as apt to order companies into action before they themselves have had much time to devote to structuring or framing their own mission. They do so without formulating a conceptual solution strategy at their own level, following the lead of policy decision makers. The famous mission then-Colonel Sean MacFarland received while commanding a Brigade Combat Team in Iraq in 2004, “Fix Ramadi, but don’t do a Fallujah!” serves to illustrate such mission statements.

This vagueness means that a campaigning military organization must learn and adapt as fast as it can, at multiple levels at once, and it must learn and adapt in ways that are unique to every echelon while drawing on knowledge and support from peers, superiors, and subordinates alike.

Decide an Assumed Logic

Given such mission situations, military leaders will not recognize and categorize the mission-situation into familiar patterns quickly. Because interactive complexity is dynamic, one has to identify *tendencies* in the interactivity. Coping with such tendencies requires sorting through a mass of seemingly unrelated data to impose logical structure. This takes classic inductive reasoning, generalizing from particulars. Worth noting is that scientists tell us inductive reasoning cannot be hurried, and it cannot be done well when sleep deprived. See Paul Claxton in *Hare Brain, Tortoise Mind* for insight into the process. Also, see *Thinking Fast And Slow* by Daniel Kahneman for further insights into why we often draw the wrong conclusions from apparent facts. *Blink* and *The Tipping Point* by Malcolm Gladwell are current popular books on the same subjects. The first one tells you about the power of expert snap judgments, and when they can’t be trusted. The second book explains the nonlinear dynamics of human interactivity, and the tricky business of predicting, or reacting to, social trends and movements.

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Bringing together people with different perspectives and fields of relevant knowledge is always helpful, and engaging in rigorous “cross talk” laterally and vertically with peers, subordinates, and superiors about different interpretations of the available facts can tease out relationships and logical frameworks to explain them. Advances in modern military communications, like Force XXI Battle Command Brigade and Below, a Linux-based communications platform, and the Command Post of the Future command and control software system can help in the difficult challenge of *sense-making* when properly used.

Returning to the traditional four steps of the problem solving process, distinguishing the nature of the first two from the third is instructive. Structuring or framing the mission problem and developing a conceptual solution strategy require *deciding* on a conceptual formulation or rationale for the concrete actions that follow in the next two steps. Such decisions are made based on incomplete knowledge and assumptions of *logic*—what will happen, if I do this (e.g., seize and hold high ground) or that (e.g., establish a system of outposts)?

Care must be taken to acknowledge, test, and record such assumptions—even when they are drawn from established doctrine! Given the way the human brain works, the commander and other participants will begin to design the guiding idea for action even while they are framing the problem. Making the best possible conceptual sense of the known facts of the mission-situation and formulating (or designing) an advantageous conceptual path forward given that *understanding* is the more difficult kind of decision-making company level leaders will face. Finding the most promising path forward in constantly shifting “terrain,” metaphorical or otherwise, is the challenge. A good article exploring this challenge is “Thinking and Acting Like an Early Explorer” in *Small Wars*

Journal, April 2011. These steps require thinking and acting like an explorer before the days of *Google Earth*, *The Weather Channel*, and global positioning systems. The wisdom in this article is not limited to “small wars.”

Outside the military, choices of logic are called “strategic” decision-making, or “strategic design.” Because the commander and his associates have to remain skeptics about the way they have initially framed the problem and to keep testing their hypothesis to failure, this logic is fraught with difficulty. Actively checking for facts that might disconfirm assumptions and posturing oneself to avoid complacency induced by successes is vital. *The Black Swan: The Impact of The Highly Improbable* by Nassim Nicholas Taleb is a good reminder of the possibility of outliers from assumed inductive patterns. The human tendency is to pay more attention to confirmation and to discount early signs of disconfirmation.

Adapting the Conceptual Frame

From this logical intransigence follows the need for iteratively adapting one’s conceptual frame *and* the conceptual, perceived solution, knowing that the interactive dynamism of the mission-situation, including the activities of the command, are creating new factors, raising the relevance of old ones, and making others irrelevant. Careful forethought must be given to the peculiar information requirements of this kind of decision making, and one has to be particularly careful that attaining concrete tactical objectives is not mistaken as the chief indicator of mission success. One must ask whether attainment of these milestones has improved the mission-situation.

Step 3 of the traditional problem solving process is governed by the decision of logic taken in the previous steps. Normally human beings do not act without an underlying logic based on inductively derived beliefs and the intentions those beliefs develop. The objective situation might actually be messy (or “ill-structured”), but steps 1 and 2 have supplied a logical structure.

Therefore, the particular interpretation of the known facts of the situation in step 1 and the best judgment of how to take advantage and avoid difficulties within that interpretation of facts are *givens* in Step 3. This step requires a translation

of mental constructs into concrete effort toward concrete objectives in the objective mission-situation. This process is *deciding what concrete objectives are most useful and relevant, and how to act*—how to optimize and improvise—within both the objective situation as experienced and the logic derived in the previous steps. The activity amounts to deciding what concrete near-term objectives to pursue, which are usually multifarious when operating in complex situations. It also includes deciding in what order to pursue them. Applying the logic decided in steps 1 and 2 to plan backward from near-term objectives to decide what available concrete means to use, and what actual methods and techniques to apply, becomes the product. Outside the military this would be called tactical decision making, no matter at what organizational echelon they are taken.

In a world in which the structure of the mission logic remains static for long periods of time, one in which doctrine can provide conceptual templates, problem solving steps 1 and 2 require only fast modes of thinking. Such stasis implies that previous experience is readily transferrable and that problems are facile enough to be framed from a higher echelon. Step 3 is the crux of decision making. However, for combined arms company commanders and their subordinate leaders in the brigade combat teams of the current Army, the cases requiring only tactical decisions will be rare.

Still, the good news is that step 3 tactical decision making in the current Army is astute enough. The current seven-step military decision-making process and associated troop leading procedures have finely honed the science of step 3, problem solving. Disciplined and powerful linear deductive logic is taught and practiced routinely. Upon receipt of a mission, Army leaders reason backward from objectives, given the logic of the situation; deconstruct the main mission task into specified and implied tasks; and employ the organic, attached, and supporting means at their disposal according to the best methods and techniques they know. Assumptions of fact are made as necessary. Information requirements are decided based on the need to check and improve these assumptions. They are keyed to identify changes in known relevant facts, to choose between predetermined options, to support the various functions of the operation,



An Afghan National Army commando, right, plots route points on a map at Camp Morehead, Afghanistan, before he and other members of the 6th Commando Kandak begin a training operation, 8 March 2011. (U.S. Air Force, SSgt Ryan Whitney)

to mitigate surprise, and to improvise appropriate responses to unexpected dangers and opportunities. The command and control infrastructure now in place is designed primarily to support step 3 problem solving and tactical decision making. The extension of those capabilities to the “edge” would undoubtedly improve company level tactical decision making.

The fourth, and final aforementioned step in the traditional problem-solving process is “learning appropriate information from execution attempts to adapt both the tactics of concrete ends, ways, and means, and the strategy of *conceptual* ends, ways, and means.” This process suggests iterative cyclical processes.

The Cycle of Action

Most readers will be familiar with the so-called Boyd observe, orient, decide, and act “OODA” loop, the concept of turning inside the enemy’s decision cycle, an iterative cyclical process of *orienting* on relevant matters, *observing* pertinent changes in the situation, making sound *decisions*, and *acting* appropriately in a never-ending cycle.

This cycle turns more rapidly than that of the enemy in order to introduce changes into the objective situation that provide increasing advantages to the quicker side and mounting disadvantages to the slower. This cycle supports *deciding* how to optimize and improvise within the objective situation given the logic and rationale decided upon in steps 1 and 2. Those previous decisions of logic determine what matters are relevant toward achieving the desired concrete ends, what changes are pertinent for successful execution of current operations, what execution decisions are required, and what concrete adaptations are required to achieve near term concrete objectives. This *tactical* decision cycle is a reasonably good way to think about iterations of step 3 that are also implied in step 4.

Succeeding in missions set in dynamic and interactive complexity requires more than the well-known tactical decision-making cycle. The Australian Army’s solution is to modify the OODA loop to a cycle of *acting* to learn, *sensing* what has changed, *deciding* what the changes mean, and *adapting* the next action to begin the A-S-D-A cycle again. I find this conceptually clumsy. It mixes the backward reasoning tactical choices for acting and the very different forward reasoning choices of logic. Better to emphasize that the OODA loop pertains to choices for acting in the objective world within a given logic, I think. Something like the A-S-D-A cycle can test and improve the command’s logic.

This *strategic* decision cycle periodically attends to steps 1 and 2 and to the conceptual elements of step 4 of the traditional problem-solving process. This strategic iterative cycle turns more slowly because the tactical cycle may turn several times without need to adjust the guiding rationale that governs the selection of desired concrete objectives and their sequencing or the choice of methods and techniques for attaining them.

This slower conceptual cycle has different information requirements than the faster one acting in the concrete mission world. The first requirement for its operation is to have an explicit articulation of the solution strategy and the latticework of logical hypotheses and assumptions that constitute the currently reigning

problem frame and conceptual strategy. One has to refer to it frequently with a skeptical frame of mind. Knowing that the interactive dynamism of the mission situation, including the activities of the command, are constantly creating new facts, raising the relevance of old ones, and making others irrelevant is the second requirement. The combined effect of these factors will cause the solution strategy to fail. The third requirement is to establish practices to rigorously test this theory and to recognize solution strategy failure early. This would include mimicking on a smaller scale the well-known process of scientific discovery, a process of creative conceptual destruction and rebirth.

In science, the reigning theory and its elements are constantly put to the test by networks of earnest scientists, even while others are applying it to introduce new technologies and new things into the real world. This constant questioning of the reigning theory's ability to describe, explain, and predict *cause and effect* is constantly questioned. Unexplainable facts and unpredicted phenomena give rise to new explanations and new hypotheses that eventually become new reigning theories.

In operational practice, commands must learn from acting in their mission worlds based on their reigning solution strategy theory. They must ask themselves such basic questions as what concrete outcomes their theory should predict and what the early evidence might be. Then they must sense whether the changes taking place in the mission-situation count as improvements in light of the mission. They must ask and decide whether the concrete objectives the command has attained are contributing toward improvement or not. Checking for facts that could *disconfirm* assumptions will prompt progress better than registering evidence that confirms preconceptions. Deciding what changes and what new factors in the mission-situation mean will lead to adapting the problem frame and solution strategy to the new understanding. Acting again based on a new and improved reigning theory continues the cycle. Careful forethought must be given to the peculiar information requirements of this kind of decision making.

This slower cycle occurs naturally and episodically in every situation, even when it is not consciously recognized to be taking place.

From Theory to Practice

I experienced this cycle as a company commander on extended operations in Vietnam. I learned early the wisdom of this old rule of thumb: "When in doubt, do *something!*" However, I also knew that it should be applied only when the mission or the unit were endangered. I learned that at all other times when I was in doubt of what to do, pausing to give the matter some thought was a good idea. I know that competent peers also periodically tended to reframe their own mission problems and rethought how to approach their mission differently. It would have been better had I done it explicitly, with some education and with some help. As I gained maturity in command, I learned to compartment the linear tactical thinking and decisive acting portion of my brain from the nonlinear questioning and pondering part while I switched from tactical mode to strategic mode as the situation demanded. There were times when "making things happen" in the real world had to dominate my thinking. There were times when I had to trust in subordinates to do that for me while I had to ponder whether what we were trying to accomplish still made sense. I had to think about how my organization fit into the bigger scheme of things.

As aforementioned, a campaigning military organization must learn and adapt as fast as it can, at multiple levels at once, and it must learn and adapt in ways that are unique to every echelon while drawing on knowledge and support from peers, superiors, and subordinates. When company commanders are tending to the periodic reframing of their logic, they provide valuable insights to the echelons above them, and vice versa, especially when it is done rigorously and interactively. What needs to be done is to recognize the importance of this decision cycle and apply new science and new art to enhancing its functioning down to the lowest levels possible. **MR**