

The Joker Is Wild

Managing Assumptions in Planning and Execution

By JEFFERY E. MARSHALL

As the old adage goes: to *assume* is to make an *ass* out of *you* and *me*. It is equally applicable to the *development* of assumptions, and we should keep that in mind as we plan and make decisions. Assumptions that are misunderstood, not validated, and poorly managed will likely lead to havoc. In war, bad assumptions can do much more than make you look the ass—havoc kills the wrong people.

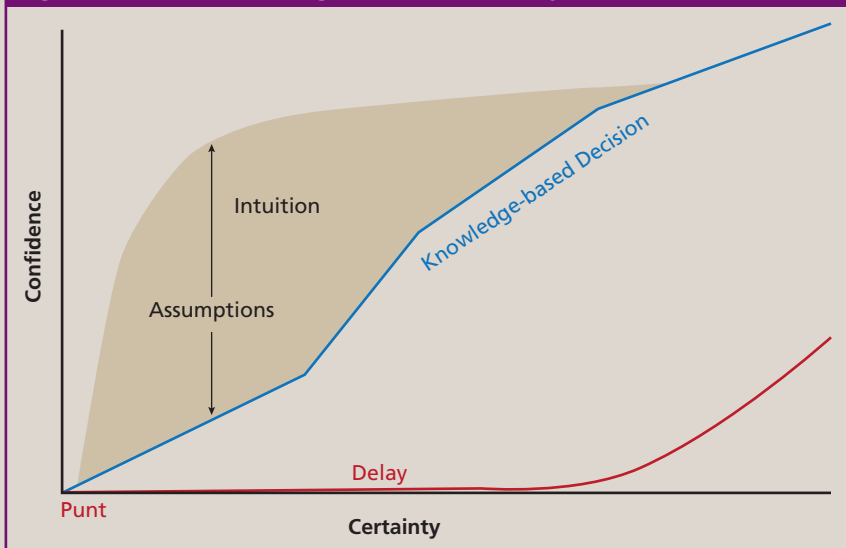
History is replete with examples of assumptions that were neither tested and validated nor balanced with a branch plan to execute if the assumptions proved incorrect. For example, in World War I, the German Schlieffen Plan assumed that the British would not intervene and that the French could be defeated in 6 weeks. The Germans were wrong on both counts. The British intervened, the French held on, and a bloodbath ensued. The untested assumptions in Operation *Iraqi Freedom*, such as the Iraqi populace welcoming the invasion force with open arms and the presence of weapons of mass destruction, are noteworthy as well.

Assumptions are more than just best-guess factors required to continue the planning process. As Joint Publication (JP) 5-0, *Joint Operation Planning*, points out, assumptions are suppositions that we require in the absence of facts in order to plan. In many cases, these suppositions drive operational success or failure, and the inability either to understand or to manage assumptions can open the door for significant problems, or even catastrophic failure.

Assumptions are a critical part of both the decisionmaking and decision execution processes. The new concept of operational

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Figure 1. Decisionmaking under Uncertainty



design makes assumption management even more critical than the deliberate decisionmaking process. Operational design places emphasis on intuition and less structured, more creative decisionmaking and is absolutely critical for success in the complex joint interagency, intergovernmental, multinational (JIIM) environments that our forces will operate in. However, we must understand not only the explicit assumptions the commander and staff make during operational design, but also the implicit assumptions inherent in a less structured decision that are often unstated and perhaps not even recognized. These implicit assumptions could significantly impair an operation if they are not understood and managed properly.

General James Mattis, in his introductory letter on operational design, discusses the need for creativity and critical thinking rather than mechanistic processes.¹ Figure 1 shows the relationship between intuition and knowledge-based, structured decisions. Intuitive decisionmaking requires the commander and staff to make assumptions to span knowledge

gaps. The commander's intent must drive the entire process in order to guide and prioritize the staff's efforts.

Once the decision is made, however, a certain amount of structure is absolutely required to execute the decision effectively and continue to adapt to changing circumstances. The staff must use the science part of decisionmaking to understand the knowledge gaps that require assumptions and to develop required branch plans to hedge risk. This article focuses primarily on understanding both explicit and implicit assumptions and their management, and it provides a structure for their management.

As we develop the doctrine to support more effective assumption management, we must update the corresponding knowledge management (KM) doctrine and capabilities. This is not simply a technical process. It must entail a complete review of our approach to decision support that includes not only the technology, but also the organizational structure, processes, and doctrine. In other words, we need a complete doctrine, organization,

training, materiel, leadership and education, personnel, and facilities review to ensure we can execute operational design.

So how do we currently define and manage assumptions? JP 5-0 states:

A fact is a statement of information known to be true (such as verified locations of friendly and adversary force dispositions), while an assumption provides a supposition about the current situation or future course of events, assumed to be true in the absence of facts. Assumptions are necessary to enable the commander to complete an estimate of the situation and select the COA [course of action]. Assumptions that address gaps in knowledge are critical for the planning process to continue. For planning purposes, subordinate commanders treat assumptions made by higher headquarters as true in the absence of proof to the contrary. However, they should challenge those assumptions if they appear unrealistic. Assumptions must be continually reviewed to ensure validity.²

The doctrinal definition is fine from a planning construct, but it leaves out a critical aspect of the operational construct: decisionmaking. The language in JP 5-0 treats assumptions as primarily a planning construct: “Although there may be exceptions, the staff should strive to resolve all assumptions before issuing the OPORD [operation order].”³ If we are not careful, the inference is that making and managing assumptions cease once the plan is written and the staff moves into execution mode. At a bare minimum, assumptions should drive operational risk assessments, and the commander and staff must understand how unresolved assumptions may impact the operation.

Although the plan is critical, articulation of the plan and the follow-on execution including the input to the commander’s decision cycle are paramount to success. Planners try to anticipate the critical decisions that the commander will need to make and construct a decision support matrix (DSM) to help identify when to make the decision. The Commander’s

Critical Information Requirements (CCIRs) are designed to gather the information required for a decision. The CCIRs are linked to anticipated decisions within the DSM.

However, within every anticipated decision, there is either an implicit or an explicit assumption—the conditions required to make the decision will be met. This implies that the CCIR will be completely answered and that there will be little or no uncertainty and ambiguity in the decision. In a perfect world, the commander will acquire complete knowledge and be able to make every decision based on this complete and accurate knowledge. War, however, does not exist in a perfect world. Decisions, particularly critical game-changing decisions, are often made without complete information.

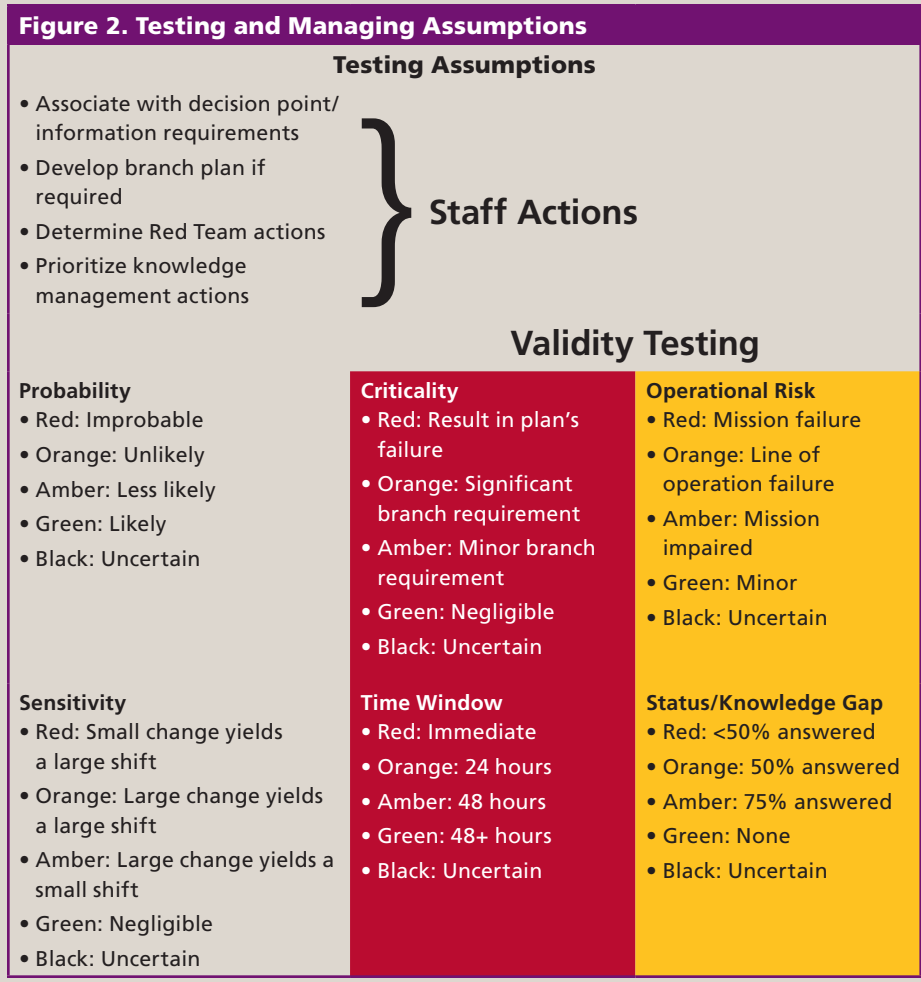
When commanders need to make a decision without perfect information, they will do so based on assumptions as shown in figure 1. The shaded intuition area is a knowledge gap that must be spanned by assumptions until they are turned into facts.

In spite of the advances in command, control, communications, computers, intelligence, surveillance, and reconnaissance, there are still gaps—often large—in the knowledge that a commander needs to make critical decisions. Thus, commanders must use an intuitive approach based on their experience and understanding of the situation. The operational design process clearly recognizes the need to emphasize creative thinking and to move beyond purely structured decisionmaking processes in complex environments. Thus, these decisions will rest upon assumptions, either explicitly stated or implicit in the decision itself.

When decisionmakers are faced with uncertainty, they may take one of three actions: punt, delay, or make an intuitive decision using assumptions.

Punt. The commander elects not to make a decision. However, the commander *has* made a decision: to ignore the conditions that generated the decision requirement. If the conditions are not critical, this may be fine. If the conditions could generate either an opportunity for success or the conditions leading to mission failure, however, punting the decision is an abrogation of command responsibility.

Delay. The commander elects to delay the decision until he has greater knowledge and confidence. If the situation is not time sensitive, this action may be completely appropriate. But in dynamic situations, the commander may not have the luxury to wait



until the knowledge gap closes. Many, if not most, DSMs imply a delay until perfect or near-perfect knowledge. They identify the decision criteria, normally associated with answering specific aspects of the CCIR. Few, if any, DSMs note the risk associated with delaying a decision until specific elements of the CCIR are answered.

Intuitive Decision. The commander elects to make a decision based upon less-than-perfect knowledge. These decisions can be either structured or unstructured. A *structured* intuitive decision occurs when the commander and staff make explicit assumptions about the missing knowledge and base the decision upon these assumptions. An *unstructured* intuitive decision occurs when the commander does not make formal assumptions about the missing knowledge and acts based upon experience. Intuitive decisionmaking is a by-product of experience and is framed within implicit assumptions that the commander specifically deems acceptable. These types of decisions often happen in time-sensitive situations. Effective staffs will start to define the implicit assumptions and work assumption management as soon as possible after the decision is made.

When commanders elect to make intuitive decisions, they must understand the implicit and explicit assumptions in the decision and rapidly engage the staff to fill in the knowledge gaps and develop branches in the event the assumptions are not valid. Operational design doctrine must address the assumptions that underpin creative thought and the requirement to validate and manage them. The staff's function is to help the commander take measured risks and hedge them in order to make effective intuitive decisions.

To understand an assumption, we must ask several questions:

So What? This is a key, but often unasked, question. Will the lack of the assumption fundamentally change the decision or the plan? Just because a planner may need the assumption for a specific portion of the plan does not mean that the decisions based on the assumption will affect mission success and endstate.

How Sensitive Is the Assumption? Will a small input change make a huge difference? If the assumption is relatively inelastic and does not change much as conditions change, then the risk may be far more containable.

What Is the Risk If We Are Wrong? The current doctrinal literature, mainly in JP 5-0,

contains a great deal of discussion on assumptions and their importance, as well as the need to manage the assumptions process. However, the literature provides little guidance on how to develop and manage assumptions. However, one key nugget in JP 5-0 does give a hint: "The information needed to verify or refute a planning assumption is an example of a CCIR."

CCIRs are linked to expected decisions, which rest either explicitly or implicitly on assumptions. Therefore, the information needed to verify or refute a planning assumption is not just an *example* of a CCIR, it is the very *nature* of a CCIR. CCIRs exist to plug knowledge gaps, which are covered by assumptions—either implicit or explicit—until the information is received.

Making Valid Assumptions

Commander's intent is perhaps the most critical component of operational design. A well-crafted commander's intent clearly articulates the desired outcomes and changes to an environment that an operation should achieve and the key tasks required to reach this state. Commanders and staffs should carefully review the commander's intent to ensure that they understand any implicit assumptions and make them explicit.

But there are other areas that may help to identify implicit assumptions.

Perhaps the easiest place to start on assumptions is the DSM. Planners need to carefully review it and determine the underlying assumptions required in each decision for which there are open information requirements. As discussed above, each projected decision rests upon one or more assumptions. Often, these assumptions are implicit: we will either execute the decision or not. However, the implicit assumption that is often overlooked may lie at the core of the most critical decision. What happens if we do not execute the decision?

Essential and key tasks are another source of potential assumptions. Often, these tasks rest upon implicit assumptions about resources or partners. The key is to determine the anticipated conditions under which the task must be performed and determine whether they require an explicit assumption that must be validated through an information requirement.

The operating environment is another source of potential assumptions. JP 2-0, *Joint Intelligence*, discusses the need for a Red Team to review assumptions in the operating envi-

ronment as part of joint intelligence preparation of the operating environment.

An Integrated Example

Consider a noncombatant evacuation operation (NEO). The commander's intent may clearly articulate that the endstate is that all U.S. citizens and designated third party nationals are safely evacuated and the U.S. Embassy is secured and supported. Key tasks may include securing the Embassy, conducting the evacuation from designated collection points, establishing and maintaining a safe haven, supporting evacuees, and moving evacuees beyond the safe haven.

At this point, the intent and tasks rest on several key implicit assumptions:

- Evacuees can get to the collection centers. What happens if they cannot? Does the commander's intent mean that the evacuation force must go to the evacuees?
- The United States will be able to establish the planned safe haven. What happens if the safe haven is not available?
- How many designated third party nationals will the United States support? This could dramatically impact evacuee flow and the lift assets required.
- The United States will have the air-and/or sealift assets required for the evacuation. What happens if U.S. military forces are not sufficient and the plan calls for contracted lift? What happens if contracted lift is not available?

The situation in NEO planning can get even more complex as the planners review the various NEO conditions: permissive, uncertain, and nonpermissive. The assumptions and their ramifications may change between conditions. For example, contracted lift may not be available at all in a nonpermissive NEO operation.

Once the staff starts to develop assumptions, they must be tested to ensure validity. If valid, the staff then needs to determine what wargaming, analysis, and planning actions are required. Figures 2 and 3 provide a method to validate assumptions as well as to manage the actions required for valid assumptions.

JP 5-0 clearly states that assumptions must be valid. However, neither JP 5-0 nor any other doctrinal publication provides a method to determine whether an assumption is valid, much less a method to determine how critical it may be. The areas in the bottom half of figure 2 are a potential way to determine

validity and importance, which can then be built in a tracking matrix as shown in figure 3.

In addition to the metrics discussed above, two key metrics help to determine validity: probability and sensitivity. Both provide planners with a way to assess the likelihood of an assumption being correct and also the sensitivity of the assumption to changes in the inputs that ultimately drive the assumption. If the probability is either extremely likely or extremely unlikely, then the assumption may not be valid—at least as currently stated. In this event, planners should revisit the conditions that caused them to develop the assumption and ensure they have stated it properly. If the probability is extremely low, they may possibly eliminate the assumption altogether.

If the assumption is very inelastic—that is, if changes in inputs do not materially change outcomes, making the assumption far more containable—it carries less risk. A very elastic assumption can drastically change the impact of an incorrect assumption and carries more risk. Highly elastic assumptions may require more detailed branch planning, especially if the assumption is critical to the operation and poses significant operational risk. They should also be explicitly included in the CCIR.

As shown in figure 3, all of the metrics combine to determine both how valid and how important the assumption is to the operation. These metrics can then be used to prioritize both KM efforts as discussed above, as well as branch planning. They are more than simple stoplight charts. They provide staff with the framework to properly assess and categorize planning assumptions in order to:

- determine if the assumptions are valid
- understand how important they are to the operation
- determine the key inputs the assumption depends upon
- prioritize KM resources to fill in information gaps
- ensure a key assumption does not get lost in the often hectic process of plan execution.

Assumptions need to be integrated into the DSM. As noted earlier, virtually every decision in the DSM has at least an implicit assumption that may require branch planning. Figure 3 shows an Assumption Management Matrix that clearly associates the assumption

with decision points and information requirements. Likewise, the command should consider adding a column to the DSM that shows the assumption numbers from the assumption matrix to cross-validate and track the list.

Any assumption that is valid and at least somewhat elastic should have a branch plan. The other metrics of risk, criticality, and time available can be used to prioritize planning.

If planners are uncertain about potential ramifications of incorrect assumptions or the sensitivity of the assumption, they may turn to the command's Red Team to explore various branches that could stem from the assumption. While this may be a different way to use the Red Team than that cited in JP 2-0, *Joint Intelligence*, it could provide a valuable analytical tool for the command's planners. A well-trained Red Team can potentially eliminate a great deal of time from planning requirements if it can explore potential branches and outcomes and assist planners in both prioritizing their efforts and focusing on the key areas that could most influence operational success.

The goal of assumption management is to provide commanders with the confidence to make intuitive decisions and take measured risk that can be hedged through effective management tools, targeted Red Team analysis, selected branch planning, and prioritized KM that quickly closes gaps.

Recommendations

Expand current doctrine to include more discussion on how to develop valid assumptions and, equally important, how to manage them as planning evolves to execution. Operational design emphasizes the need for more creative decisionmaking with potentially less structure. This change is significant and reflects the complex JIIM environment in which virtually all military operations are conducted. But as we lessen the structural format for decisionmaking, we need to consider adding more analytical capability to ensure that we continue to make and execute effective decisions. The complexity of JIIM environments will almost certainly require more assumptions during the planning process. Furthermore, these assumptions are also likely to be far more elastic than in simpler environments. Therefore, doctrine needs to reflect the need for increased cross-functional analytical requirements and expand upon techniques to make valid assumptions and then manage them. The doctrine should reinforce the linkage between assumptions and

decisions, as well as expand upon the need to develop branch plans for designated elastic assumptions.

In addition, the current doctrinal references to assumptions reside primarily in JP 5-0. While JP 5-0 should provide the overall guidance on assumptions, it cannot address the assumptions required in various functional areas. All families of joint publications should discuss assumption development and management at the “-0” level. In particular, JP 1-0, *Personnel Support to Joint Operations*, JP 2-0, JP 4-0, *Joint Logistics*, and JP 6-0, *Joint Communications System*, need to address the assumptions required in their particular functions and how to develop them and integrate them into an overall plan.

Modify current doctrine to discuss the need for effective decision support and incorporate a decision support subparagraph into the Command and Signal paragraph of the joint orders format. The current doctrine discusses CCIR in detail, especially in JP 3-0, *Joint Operations*. However, it never definitively states where the CCIR is published. Moreover, there are few references to decision support. JP 5-0 merely states decision support tools are important. This practice relegates the making of a critical decision to almost an afterthought in the orders process. Given the complexities in the JIIM environment and the requirements in operational design, decision support is critical to mission success.

A section on decision support to both JP 3-0 and JP 5-0 should be added. The excellent CCIR discussion in JP 3-0 should be incorporated into the new section and include expanded discussion of KM, the need to link KM, CCIR, and assumptions together, and their management. Likewise, the discussion in JP 5-0 should be included in a decision support section to make similar linkages between assumptions, CCIR, and KM. It should also discuss specific decision support techniques.

Finally, paragraph 5 of the standard operation order should be modified to include a new paragraph 5C governing Decision Support. Include:

- 5C1. Decision Points
- 5C2. CCIR
- 5C3. KM requirements.

Develop and publish comprehensive Decision Support tactics, techniques, and procedures (TTPs) that reflect the relationships

Figure 3. Assumption Matrix

Assumption	Status	Decisive Point	Information Requirements	Probability	Criticality	Risk	Sensitivity	Branch	Red Team Action
Assumption 1	Orange	1	1.1, 1.2, 1.3, 1.4	Yellow	Red	Red	Black	Branch 1	
Assumption 2	Yellow	2	2.1, 2.2	Black	Red	Orange	Orange	Branch 2, 3	
Assumption 3	Red	3	3.1, 3.2	Orange	Orange	Orange	Green	Branch 4	
Assumption 4	Black	4		Green	Green	Black	Green	Not Valid	
Assumption 5	Green	5	5.1, 5.2, 5.3	Green	Orange	Red	Orange	Fragmentary order issued to use Branch 5	
Assumption 6	Green	6	6.1, 6.2, 6.3	Green	Orange	Green	Orange	Assumption validated, no action required	

among decisions, assumptions, CCIR, and KM. Include the metrics in figure 2. Develop TTPs to prioritize KM collection efforts. These TTPs should be standardized across the joint community and taught at the Joint Advanced Warfighting School and similar Service schools. Consider publishing a specific Decision Support joint publication that develops doctrine to integrate decisions, assumptions, CCIR, and KM.

Add an Assumption Management Matrix to augment the standard DSM. Include the Assumption Matrix in figure 3 as part of the DSM and staff briefings. Brief the matrix whenever the DSM is briefed. JP 3-0 discusses the need to review CCIR as part of assessments. Expand this section to include the DSM and the Assumption Matrix. A formalized assessment board that briefs during operations may facilitate a comprehensive review.

Better integrate Red Teams into decision support and broaden their focus beyond that of the traditional intelligence role. The Red Team is a tremendous asset to a commander and staff that can potentially be leveraged beyond an intelligence role. Trained Red Team members have a broad skill set in critical thinking, political-military analysis, wargaming techniques, cultural analysis, and other skills critical to the analysis required in operational design. Red Team members have the ideal skill sets to analyze a concept to determine the implicit assumptions that are inherent in the environment and tasks and then use the metrics in figure 2 to determine assumption validity and elasticity. They can

then work with planners to wargame branch plans. Commanders may want to send key analysts to the Army's University of Foreign Military and Cultural Studies for the Red Team Leader Course and the Red Team Members Course.

Making assumptions is hard. Even experienced planners will often scratch their heads over what assumptions they need to make, and may completely miss the implicit assumptions they make and have not acknowledged. Unfortunately, implicit assumptions and poorly understood and managed assumptions can compromise a plan and lead to flawed execution and possibly failure.

Virtually every significant decision is made with some degree of uncertainty and missing knowledge. In many cases, the assumptions that mentally fill in these gaps are implicit. In other cases, the missing knowledge and uncertainty are not even recognized. In both cases, the commander and staff have made assumptions that could be critical to mission success. Sometimes the most obvious assumptions are not stated and managed because they seem so obvious.

Commands with effective Decision Support Matrices and synchronized data collection and rigorous decision support systems should lessen the impact of untested assumptions but still might not catch everything. Adding a deliberate assumptions analysis and management process could refine decisionmaking and help decisionmakers acknowledge all implicit assumptions made and analyze the risks associated with them.

This process should also help to better define asset requirements and branch plans. For example, if the J2 (intelligence) states a missile threat is negligible, there could well be an implicit assumption in the analysis. If that is the case, the J3 (operations) may need to add a branch plan that requires additional missile defense assets.

The recommendations above should help to add more discipline to the planning system at a small cost in extra planning resources. Teaching effective assumption making and management could also help to improve planning and reduce overall risk by reducing unacknowledged implicit assumptions. **JFQ**

NOTES

¹ James N. Mattis, "Vision for a Joint Approach to Operational Design," memorandum for U.S. Joint Forces Command, October 6, 2009, available at <www.jfcom.mil/newslink/storyarchive/2009/aod_2009.pdf>.

² Joint Publication 5-0, *Joint Operation Planning* (Washington, DC: The Joint Staff, December 26, 2006), III-26.

³ Ibid.