Processes of Military Decision Making

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This essay examines the prevalent theoretical approaches to decision making and surveys practical models appropriate to the military setting. It discusses and compares the relative advantages and disadvantages of each model, and then makes recommendations about their application to the military decision making process. Currently, two major approaches, the rational and the cognitive, offer an orderly process that may help military leaders make better decisions. Neither is yet complete. Each approach offers its own set of concepts to attain the chief products of the decision making process. These sets of concepts blur the real differences between the approaches and draw one into a debate that does not deal with essence. In addition, both approaches tend at times to take the tools and the ideas and over-develop them into hobbling, constraining techniques, thereby missing the fruits that could have been reaped by a more informed, tempered use of them as ideas. Thus finding a bridge between the approaches that recognizes the advantages and disadvantages of each and makes a temperate, judicious use of the respective tools can allow us to enjoy the best of both worlds.

Keywords: decision making; situation assessment; strategic planning; strategic military leadership

> Orderly processes of decision making are supposed to give the decision makers – and those who are charged with evaluating their conduct – means to construct and oversee good judgment that will be helpful in reducing the risk of uncontrolled reliance on emotion, unfounded intuition, impulsive response, and personal or political considerations liable to be disruptive to an orderly routine.
>
> The Winograd Commission Report, p. 54

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Introduction

It is impossible to overstate the importance of the decision making process for the military leader tasked with fulfilling a mission imposed on him by the political echelon. The quality of the decision making process among the upper command levels is among the factors determining the army's success in attaining the desired political goals, and some claim it is even more important than the combat itself.[1] Similarly, more than anything else, history tends to associate successes and failures with the quality of the situation assessment and the decisions made by the military commander in preparation for operations and in their execution.

Is military leadership an art or is it an orderly, organized analytical process? Is it the result of brilliance and intuition or of calculated, logical deduction? Or is it a combination of these and other factors? What are the major obstacles in the attempt to provide a process to guide military decision making using an orderly format so that the commander and the members of his staff can make decisions in an effective, harmonious, synchronized way? This essay examines the prevalent theoretical approaches to decision making and, with that as background, surveys practical models deemed appropriate to the military setting. The essay discusses and compares the relative advantages and disadvantages of each model, and then makes recommendations about their application to the military decision making process.

The Essence of the Doctrine in Planning Military Operations

The key issues a commander and his staff face when planning operations are decisions regarding definition of the operation and definition of the method to execute it. To make these decisions, the command must understand the intention and goals of the upper echelon regarding the specific operation. While there are concomitant secondary processes, the core of the planning and its major outcomes lies in defining the task and the way to accomplish it.[2]

The mission is defined by the commander on the basis of a command or directive from the upper echelon or on the basis of his own initiative given his understanding of the situation and the responsibility with which he has been charged. Deciding on how to use force to fulfill a mission is an expression of the commander's military leadership. In order to execute a decision making process the commander must gain an in-depth

understanding of the operational problems and formulate the solutions that will attain the mission's goals in the most efficient and effective way possible.

Military doctrine tries to provide a process of decision making for the planning of operations to generate these two products, that is, definition of the mission and definition of the method, along with other aspects required of the command, from receiving operational tasks from superiors to giving operational tasks to subordinates. The decision making process is usually presented as a model consisting of steps and outcomes. A direct continuation of the decision making process during planning is the operational command and control process, but that is beyond the scope of this essay.

Theoretical Approaches

One may divide the many models in this field into two major currents and approaches.

a. *The rational-philosophical current*[3] relies on logic as its primary tool, i.e., calling for as good an analytical assessment as possible of the strengths, weaknesses, opportunities, and risks. The rational current perceives the decision making process as a logical analysis in order to identify the optimal alternative for action.

b. *The cognitive-psychological current* relies on all cognitive processes of the human mind – analytical reasoning alongside intuition-based thought. This current sees the decision making process as bringing the military leader to an awareness or sudden insight about the desired method of operation. The tools at work are cognitive, designed to create the natural conditions for the "eureka moment" while avoiding the pitfalls of human reasoning in general and reasoning under pressure in particular.

As yet neither current is fully grounded in comprehensively articulated theories, but research efforts are being invested in both.

Rational Approach Models

The most popular models provide a series of sequential steps of analytical thought in which alternatives are weighed according to their advantages and drawbacks. In the simplest terms, these models expand on three basic steps: analysis of the problem in light of the worldview of the decision maker; proposal of possible solutions and choice of the most effective

alternative by means of analytical thought; and implementation.[4] One of the simplest models outlines the following steps:

a. Define the situation and the desirable outcome.
b. Suggest possible solutions.
c. Compare and assess the alternatives.
d. Choose an alternative.
e. Develop a comprehensive plan.

Other rational models of decision making processes expand on this to a greater or lesser degree. Alongside the model of the process itself, some auxiliary models for helping the decision making process have been developed, such as diagrams of the influential factors and their relationships, SWOT (strengths, weaknesses, opportunities, threats) analyses, decision trees, risk management, scenario simulations, and other emerging tools. Suggesting alternative solutions and comparing them is a typical stage of rational processes. The best alternative is assessed in an analytical, logical process that considers opportunities and risks vis-à-vis success, cost versus benefit, and possible unintended consequences.

Criticism of models of this type contends that it is impossible to examine the entire gamut of possibilities; it is impossible to assess the development of future events; and any such assessment is in any case subjective, requires data that is usually unavailable, and demands an extended period of time. The principles of war are often abstract and in a state of mutual tension (e.g., the need to concentrate force versus the need for security and reserves). At times, one has a good idea of the method of operation that will be chosen already at a very early stage of the decision making process as the result of natural cognitive processes, and weighing other alternatives presents as a tiresome and unnecessary burden.

Cognitive Approach Models: Recognition-Primed Decision Making
Other models are based on psychological research underway since the 1980s in recognition-primed decision making, designed to study the way in which professionals, especially in the military, make decisions in practice. The natural way in which people make decisions is as follows: one identifies a problem and looks for a solution; when an intuitive idea rises to the surface of consciousness it is "screened" by thought. If the scenario solves the problem, the solution is adopted; if the solution is assessed as one that will not solve the problem, the individual tries to adjust it. If this

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also fails, the solution is abandoned and the next solution is tested using the same method. Ultimately the individual adopts the first solution whose "screening" in the imagination is assessed as solving the problem.

Running the solution in the imagination as if it were a screenplay occurs because of mental patterns that have developed in an individual's mind as a result of previous knowledge and experience. According to this model, there is no comparison among alternatives; rather, the solution is put to a cognitive test in light of the individual's intuition. Individuals who make decisions become experts in their fields thanks to repeated learning, exercises, and experiences in cognitive decision making processes that hone their knowledge and experience, and therefore also sharpen their ability to hit on the right solution intuited in this manner.

On the basis of this theory, a model for recognition-primed decision making includes the following stages:[5]

a. One's superiors have issued instructions or one recognizes on one's own that it is necessary to make a decision.

b. The commander studies the mission and the variables affecting it and affected by it, analyzes the mission, and conceptualizes a method of operation. This is the key stage in the model. What is unique about this model is that all actions occur together. If the commander has confronted similar situations in the past, the process may be rapid. If it is difficult to present only a single method of action, then several alternatives may be proposed, requiring that one of them be chosen.

c. The staff examines and develops a method of action. At this point, the staff may think of a preferred method and must develop it in addition to the method it is examining based on the commander's instructions.

d. A war game is staged. Beyond actual testing, the importance of the war game is the thorough encounter with the enemy's possible methods of action.

e. A plan and/or a command are developed.

f. The model is not unidirectional and it is necessary to go back to previous steps when a tested method of action fails to attain the desired results.

The model combines intuition – a very important tool in choosing the method of action – and a rational process, which is a key tool in testing the effectiveness of a method of action.[6] There is no doubt that the model is effective in situations in which the decision maker has much prior experience in similar situations, has been trained to handle them,

participates in tactical drills, or makes decisions under time and pressure. But much criticism has been leveled at this model. It entails implications for paradigms presented in the previous context of current reality (analogical reasoning) and as a result it is possible that something other than the most appropriate method is chosen to confront the different new reality (fighting the next war with the solutions used to win the previous war).

In his book *War and Strategy*, Yehoshafat Harkabi defines analogical reasoning as a central factor in strategic errors. The assumption that the method of operation that proved itself in the past will still be suitable under different circumstances is motivated by psychological urges making the different and unfamiliar into the seemingly familiar. Such reasoning is grounded in stereotypes and hides behind the slogan of "learning from experience." It focuses on the similarities between the past and the present facing the decision maker. Israel's approach toward Egypt in 1973 is an example of analogical reasoning.[7]

The quality of decision making improves with more previous experience and knowledge, but relying on past experience and prior knowledge can also be the decision maker's undoing. While there is much value in learning the lessons of the past, it would be a mistake to dictate prescriptions of action that were right in a specific context for use in a different context.[8] In *Why Don't We Learn from History?* Liddell Hart wrote: "History has limitations as *guiding* signpost, however, for although it can show us the right direction, it does not give detailed information about the road conditions. But its negative value as a *warning* sign is more definite. History can show us what to *avoid*, even if it does not teach us what to do—by showing the most common mistakes that mankind is apt to make and to repeat."[9]

Current refinements of cognitive models emphasize two major directions designed to overcome the inherent fallacies of cognitive processes. The first is the use of tools encouraging an environment conducive to generating good ideas (brainstorming, war games, and so on). The second is knowledge of the fallacies and traps set by human thought processes for analytical processes in order to find ways to cope with them, such as countering the human tendency to analogical reasoning, which as noted tends to seek similarities and blur differences between the new condition and situations stored in one's bank of experience, or the tendency to make irrational decisions in conditions of uncertainty.[10]

Contemporary Military Decision Making Models

What follows is a brief overview of two contemporary models applied in military settings that deal with desired decision making processes at the highest echelons of the military commands.

Standard Procedure: A Rational Process

The first model is the standard military model presented to all ranks in the familiar literature on offensive doctrine.[11] This rational model includes six basic steps:

a. *Receiving the mission*: Whether it comes from superiors or is the result of the commander's own initiative, the commander must first define the mission. At this point, it is important to attain a very clear understanding of the superiors' intentions and the ramifications for subordinates.

b. *Analyzing the mission*: A situation assessment is constructed in light of the directives of the superiors, previous staff assessments, facts, and assumptions. This assessment includes a formulated mission as well as the factors capable of affecting it and their ramifications. Staff research is carried out as necessary. The situation assessment is not merely a collection of facts, but rather a complete analysis of the possible implications of carrying out the mission.

c. *Developing possible methods of operation*: Based on the situation assessment, several ideas for methods of operation are raised on how to complete the mission.

d. *Evaluating the methods of operation* through war games and analysis.

e. *Deciding on the method of operation*: The possible methods of operation are compared (not one against the other but in terms of their ability to fulfill the mission), and on that basis the method of operation is chosen.

f. *Finalizing the plan and /or command*.

The situation assessment, which starts with the completion of the first step and ends with the choice of the method of operation in the fifth step, is the most critical part of the process and is performed by the commander with the assistance of his staff. Indeed, constructing a situation assessment is part of the definition of the problem. Doctrine stresses and expands on the need for comprehensive data collection, in-depth analysis, and identification of the enemy's weaknesses, all with the commander's direct involvement.

The process of selecting the method of operation in fact entails selecting the solution. Doctrine stresses the application of the doctrine of warfare and its principles, application of the principle of stratagem, analysis of the influential factors from the end to the beginning, analysis of methods of operation from the beginning to the end, and more.

Commander's Appreciation and Campaign Design: A Cognitive Model
The commander's appreciation and campaign design (CACD) decision making process was presented systematically to the US military in early 2008 by the Training and Doctrine Command (TRADOC).[12] The cognitive planning process was tested by specifically formulated experiments carried out in 2005-2007 as well as in the field.

Underlying the proposed process is the idea of design as a thought process that precedes planning. Architects design buildings in their imagination while taking into consideration the structures' function, environment, and so on, long before they sit down to draft the actual plans. On the basis of knowledge, experience, and talent, they come up with a unique though general solution to the essence of the building, and only then do they sit down to carve out the spaces, openings, and infrastructures. The model posits a similar function by the military leader: the architect of the current mission sees the mission globally, his vision consisting of the mission as a totality of a core idea and steps before the actual process of planning. The opposite of the design process is the engineering process, a fundamentally more rational process. According to its developers, the design process is more suitable for adopting an approach to complex problems, whereas the engineering process is more suitable to the step at which one takes the products of the design and attempts to turn them into a practical plan. Design is an art, whereas engineering is more scientific in its application. The designer of a new car comes up with a complete model that provides an esthetic and functional solution to the consumers' needs in the environment in which it will be driven; in tandem, engineers will plan the car by breaking the design down into the smallest constituent parts of every subsystem and raw materials that will eventually come together to constitute the whole. In practice, military planners deal both with design and engineering in different proportions depending on the type of the problem. When the problem is very complex, the artistic aspect must

be more dominant in the solution, and more reliance on a design-based approach is required.

According to the proponents of CACD, the classical tools of military design − analyzing the power centers and weaknesses in a search for an operational solution − are better suited to the problems associated with classical clashes between armies but not at all suited to the range of situations of conflict, and certainly not to the confrontations typical of the present and foreseeable future. Therefore, a more design-oriented view is required. According to CACD proponents, current military decision making processes are technical, rational, based on systematic processes, and propelled by the belief that one can rationally optimize methods of action and choose the best one; they are burdened by too many details and are too analytical (since planning is often the work of mid-level staff ranks that are experts in analysis involving many details).

More than ever before, the characteristics of modern warfare require that planners carry out cognitive design functions. It is therefore necessary to adopt systemic patterns of reasoning stressing the whole picture and the synthesis among the details to produce a holistic view of the solution to the problem. The advocates of the approach claim that one of the major problems with commanders at present is their difficulty in defining and describing the operational problem; here too, the more design-oriented process is needed. The main tool in the design of missions is discourse[13] − open, wide-ranging debate that synthesizes ideas and viewpoints by means of competing ideas.

The CACD process is based on the following:

a. *The commander's assessment*, which aims to generate a broad, shared understanding of the operational problem in its widest aspects and in particular to understand the unique context of the problem under discussion. The commander's assessment consists of two non-consecutive sub-stages that are cyclical, integrative, and iterative throughout the greater assessment stage. The first is creation of a framework for the operational problem through an understanding of the strategic context, a synthesis of strategic guidelines, a systemic description of the problem, the identification of trends, the formation of assumptions, and definition of the mission. The second is an analysis of the mission, which entails describing the conditions that must be attained in order to fulfill the strategic guidelines, define the mission's

targets, define the potential links in the system where it can be affected, and change the system's process as desired.

b. *Design of the campaign*, which is the stage of developing the concept in general terms and expressing the main idea of the mission without going into great detail. The purpose is to define how the mission will be accomplished by describing the commander's intention (the "what" and the "why"), describing the general approach (how, where, and who) in terms of stages, organizing the operations in time and space, as well as whatever auxiliary efforts are needed, setting up command and control, and so on.

c. *Development of the plan*. CACD is one of many variations of processes based on a situation analysis according to the doctrine of systems and papers written in the field of the art of design,[14] each one of which has different emphases in the flow of the process.

The Standard Process vs. CACD

In the models presented above, different emphases are placed on the way the decision making process occurs, but these differences are not the essential distinctions between the two types. Indeed, many of the emphases in one model may find appropriate expression in the other. For example, the cognitive process also includes the situation assessment and doesn't purport to find the solution only through discourse and reasoning. Conversely, the rational process does not rule out processes of creative thinking, discussion, and competition of ideas, and in fact values them considerably.

One of the tools the cognitive approach emphasizes is the holistic or systemic view, an approach of reasoning that looks at reality in its entirety by examining the sum total of its parts (synthesis). For its part, the systematic view – separation and deconstruction – is suited to the rational approach using analytical reasoning. Here too, this is merely an emphasis and not the essential difference.

CACD stresses original thinking, critical thinking, and creativity at every stage of the process. It does not encourage finding patterns that worked in the past and projecting them onto the present. Rather, it stresses the effort to define what is different about the present on the basis of an in-depth familiarity with the past. The stress to identify the different, singular context of every mission, however, is not exclusive to the cognitive process

and is the essence of the construction of the situation assessment and formulation of conclusions based on factors of influence in the standard process.

It also seems that the call of CACD proponents for a sharp discussion of the operational problem and its solution as well as the approach encouraging competing ideas does not stem from the cognitive nature of the process. These properties are not exclusive to one type or another, but are rather organizational cultural properties that should always be encouraged in organizations irrespective of the decision making process adopted.

In addition, the design notion is not unique to CACD: the standard process developing the optimal method of operation and selection entails a design stage even if it isn't called that. The situation assessment is the design stage in the standard process. The selected method of operation in the standard process is the whole mission as seen in the mind's eye of the commander and the way the mission fulfills the task given influential circumstances. While proponents may see the design process as unique to CACD, the design notion is deeply embedded in developing processes of methods of operation and choosing the final method in the standard process without stressing and analyzing the design-based nature these processes entail.

Rather, the fundamental difference between the approaches lies in the essence of the cognitive versus the rational processes. The cognitive process defines the operational problem and the solution, while stressing recognition-primed, intuitive reasoning in addition to rational thought. Both processes recognize the advantages and limits of intuition and the fallacies and traps of human thinking processes. Yet while the rational process tries to skirt these influences and limitations by imposing rational thought and analytical reasoning, the cognitive process tries to face them head-on and undertake a thought process that encourages intuition through awareness of its pitfalls.

The two approaches are not polar opposites. The cognitive approach cannot be called irrational or a process based only on intuition that writes off analytical reasoning. In this sense, the cognitive approach is much broader, containing the rational aspect of thought. Indeed, the cognitive process uses tools of reasoning: relating to operational problems in their situational contexts; asking what situation needs to be attained; creating a

process of defining the setting and the limits of the problem in order to elicit solutions (framing); recommending thinking outside the box and asking if the problem has been correctly defined and the right questions asked (reframing); using reflective thinking – thinking about thought – while recognizing the traps of thought in analytical processes and avoiding them (such as natural distortions in risk assessments or the natural tendency to think analogically).

The rational process is based on a quantified comparison, if only in a qualified way, between cost, utility, and risk, and on finding the most effective method of operation. The process encourages systematic thinking and an analysis of alternatives, an analysis of the criteria of what constitutes success and failure, and an examination of every method of operation in light of these criteria and the chances for success.

The very deep and real divide between the approaches may be demonstrated using some examples. In the IDF staff manual of 1956, in a paragraph on methods of reasoning, the rationalist approach had the following to say about intuition: "Of course, intuition is nothing but a completely personal and subjective matter, something that one senses. It can only be tested in hindsight, in light of the results. It is therefore not a doctrine that can be taught."[15] In other words, intuition may enter decision making processes, but it is impossible to teach anyone how to elicit intuition. Rationalists do not deny that intuition is used in decision making and do not try to oust it from the process, but their way of incorporating it is by choosing commanders who have proved themselves to have good intuition and train them for leadership. By contrast, the cognitivists encourage the use of intuition based on solid knowledge and experience that meet the test of orderly critique, and is not assimilated in unquestioned fashion. General Charles Krulak, commander of the US Marine Corps in 1995-1999, expressed this approach in the conclusion to his essay "Cultivating Intuitive Decision Making": "Advances in information technology will never clear Clausewitz's 'fog of war' to the point where the analytical model is timely enough to guarantee victory. Marine Corps leaders, therefore, need to develop confidence in their own intuition – an intuition rooted firmly in solid character."[16]

Thus while the two processes recognize that excellence in military leadership is an expression of the artistry and professionalism of the leader, there is a difference in the emphases placed in order to lead, with

the cognitive process stressing the nurturing of thought processes that help manifest this excellence (such as discourse) and the rational process stressing the application of the principles of planning proven by past experience, such as principles of mission planning reflecting simultaneity, depth, timing, rhythm, and many other factors. Neither approach rules out the principles of the other approach; the difference is only one of emphasis. Moreover, the cognitive process will stress the development of the commander based on the understanding that the solution in battle builds on his personal capabilities, the extensive knowledge he has amassed (knowledge of the principle of warfare doctrine, military history, analysis of battles, and other knowledge required by a professional soldier of his rank), and the extensive experience he has gathered in missions, training, simulations, war games, and so on. In contrast, the rational-analytical process stresses the development of tools, concepts, and methods, i.e., if we outline the right method and construct clear tools for the commander, and uniquely conceptualize the problem and solution, the outcome will necessarily be better.

Discussion

The two major approaches to decision making, the rational and the cognitive, place the need to undertake a thorough clarification of the essence of the operational problem given its unique context at the front and center of the planning process and develop the optimal operational solution in light of the conclusions of that clarification process.[17] But the two approaches are still far from comprehensive theories for the application to decision making. While the advocates of the respective approaches in the military establishment tend to distinguish between the processes and even negate the effectiveness and relevance of the competing approach, it would behoove decision making commanders and their staff to draw from the best of both worlds. To do so, it is necessary to overcome two basic, natural obstacles.

The first obstacle consists of debating terminology rather than essence. Each approach seemingly has its own concepts. At the end of the decision making process, the products are meant to answer the same basic questions: what must the military leader achieve and how does he intend to achieve it? Therefore, the debate of whether we should conceptualize the products as a process of situation assessment generating a mission and method,

or as a design-based process generating a commander's assessment and the design of a campaign, or as a strategic planning process leading to operational planning, diverts us from what is actually important. We must avoid the pitfall of debating terminology: while each side in the debate projects a legitimate claim to supremacy, it often imputes flaws in the concepts used by the other. The debate is not over the nature of the final products but over the processes that lead to and generate products in a better way. In every debate over terminology and conceptualizations, it is necessary to question whether the debate is over the essence of the decision making process or is a politically charged, organizational turf war.

The second obstacle lies in the danger of using the tools proposed by either of the approaches to an absurd extreme. An analysis of the methods of operations based on the rational approach must not be carried out by over-analyzing the criteria and testing them and over-quantifying the importance of each one. It cannot be done under the conditions of chaos and uncertainty typical of the battlefield. To the same extent, the tools of the cognitive approach taken from the systems doctrine can be used ad absurdum, such as the attempt to describe reality on the basis of a systemic approach of the knotty texture of influencing factors, sub-factors affecting the whole, and an overloaded system of interrelationships, and in light of this purport to work on the system's weaknesses in order to achieve the desired operational outcome. Another example of taking the cognitive approach to an absurd extreme can be seen in the over-conceptualization and over-abstraction of language before the Second Lebanon War in the name of creative thought.[18]

It is unlikely that the next few years will produce a magic device generating great military strategy. This ability will remain the province of creative human experts in their field. Turning general conceptual ideas into recipes, laden with sub-processes and details, removes the point of an idea that makes sense and transforms it into a wearisome, Sisyphean burden that narrows one's vision. The use of tools must be limited to times when they can be useful, and they should be used deliberately, sparingly, briefly, generally, and in a way that makes it possible to distinguish between what is important and what is not.

A process that combines the two approaches described above and used by the decision maker and a small team of senior officers providing advice when consulted would recognize and act according to the cognitive

approach in order to define the mission and the method of operation. At the same time, the larger staff would use the rational approach anchored by synchronizing meeting points to ensure everyone is on the same page. In general, such junctions would include:

a. First junction − defining the task. After he recieves the government's instructions and clarifies them with the political echelon (as a goal), the commander defines the military mission and imparts it to his staff.

b. Second junction − situation assessment. The commander, with the help of his staff, will determine the situation assessment.

c. Third junction − choosing the method of operation. The commander, with the help of his staff, looks at the alternatives and decides between them.

d. Fourth junction − final selection of the method of operation. The commander selects the method on the basis of staff work, including all the results of analyses and war games applied to the methods of operation.

These junctions are not a doctrinal innovation in situation assessments, and they will be followed by the generally accepted stage of developing a plan. But while the staff operates along the rational model in approaching these junctions, the commander will carry out his work at the same time, using the cognitive approach with the help of a small team of senior officers. In the process, the commander's ideas and conclusions will be introduced and analyzed by rational means by the entire staff. Drawing the general outline at each intersection is a process that is essentially design-based, while the consequent detailed breakdown of analyses, following the design part, complements the planning.

The questions of what must be attained and how it can be attained must accompany every process at every stage and intersection. While stages 1-2 stress the clarification of the problem and stages 3-4 the solution, they must be kept in mind throughout the process and each considered in light of the other.

Appropriate use of "goal" (what must be attained in the context of the political echelon), "mission" (the required military achievement), and "method" (how the army attains it) products will parallel a process producing strategic purpose and staff ideas. There is no importance to the terms used in practice; what matters is that the officers participating in the process understand the process in which they are engaged. It is only

natural that strategic design would dominate the first part of the process, and that later on, thinking would be more systematic when dealing with planning. However, determining the exact point between the two levels or stages is best left to historians and researchers and should not concern officers in charge of design and planning.

Developing cognitive abilities must be a central piece of commander training. This is not a new recommendation, and it must be done by creating a knowledge base of general principles taken from a wealth of past examples, case studies, and specific training in decision making (war games). To this list must be added training in the use of reasoning, awareness of human consciousness, and thought processes, especially as these function under stress. It is necessary to teach commanders all that is known about the functioning of consciousness during decision making, especially under stressful conditions, just as we teach pilots the way that consciousness interprets vision and the optical illusions that may stem from these processes.

Conclusion

Commanders who are about to make use of the forces at their disposal in order to attain a military objective must make decisions about the optimal method of operation that will achieve that objective. To do so, they must clarify and answer two fundamental questions: What must be achieved? How do we achieve it? Currently, two major approaches, the rational and the cognitive, offer an orderly process that may help military leaders make better decisions. Neither is yet complete. Each approach offers its own set of concepts to attain the chief products of the decision making process. These sets of concepts blur the real differences between the approaches and draw one into a debate that does not deal with essence. In addition, both approaches tend at times to take the tools and the ideas and over-develop them into hobbling, constraining techniques, thereby missing the fruits that could have been reaped with them by a more informed, tempered use of them as ideas.

Whether we like it or not, commanders will use cognitive processes that are not only rational when they make decisions, because that is the nature of thought. Finding a bridge between the approaches that recognizes the advantages and disadvantages of each and makes a temperate, judicious use of the respective tools can allow us to enjoy the best of both worlds.

Notes

I would like to express my gratitude to Lt. Col. Boaz Zalmanovich for his comments and suggestions on reference material. All responsibility for the contents of the essay, however, is entirely my own.

1 See a debate on the issue in "Victory at the Strategic or the Tactical Level" in Yehoshfat Harkabi, *War and Strategy* (Tel Aviv: Maarachot and the Defense Ministry Publishers, Tel Aviv, 1990), pp. 477-81.

2 In this section, I have tried to avoid using prevalent terms that would be coined differently according to different decision making processes (such as "strategic goal," "objective," and so on).

3 The distinction between the philosophical and the psychological approaches is proposed because the first has been studied and developed in recent years, especially in academic settings of analytical philosophy, and the second has been studied in academic settings of the social sciences.

4 Drawn from John Pollock, "Rational Decision Making in Resource-Bounded Agents," PhilPapers, 2004, http://philpapers.org/rec/POLRDI.

5 Karol Ross, Gary Klein et al., "The Recognition Primed Decision Model," in *Military Review,* July-August 2004, p. 7.

6 Gary Klein, "Naturalistic Decision Making," *Human Factors* 50, no. 3 (2008): 456–60.

7 Harkabi, *War and Strategy*, p. 585.

8 Harkabi, *War and Strategy,* p. 591.

9 B. H. Liddell Hart, *Why Don't We Learn from History?* (New York: Hawthorn Books, 1971); see http://infohost.nmt.edu/~shipman/reading/liddell/c01.html.

10 Prof. Daniel Kahneman and Prof. Vernon L. Smith won the 2002 Nobel Prize for Economic Sciences for having discovered that decision makers tend to act irrationally when they assess the risks and opportunities under stress and ignore statistical rules in favor of their intuition. See Daniel Kahneman and Amos Tversky, "Prospect Theory – An Analysis of Decision under Risk," *Econometrica* 47, no. 2 (1979): 263-91.

11 U.S. Army FM 101-5, Ch V and JP 5.0, Ch IV, http://www.fs.fed.us/fire/doctrine/genesis_and_evolution/source_materials/FM-101-5_staff_organization_and_operations.pdf.

12 TRADOC pamphlet 252-5-500, "Commander's Appreciation and Campaign Design," version 1.0, 2008, http://www.tradoc.army.mil/tpubs/pams/p525-5-500.pdf.

13 The term "discourse" is used in the original US military documents.

14 See, for example, Stefan J. Banach and Alex Ryan, "The Art of Design – a Design Methodology," *Military Review,* March-April 2009, pp. 105-15.

15 Training Branch, Staff Work, 1956, p. 15.

16 Charles C. Krulak, "Cultivating Intuitive Decision Making," *Marine Corps Gazette*, May 1999,

http://www.au.af.mil/au/awc/awcgate/usmc/cultivating_intuitive_d-m.htm.

17 Some would claim (in a well-built theoretical setting) that one must not develop the main debate in clarifying the operational problem, but that one must focus on the method. In my understanding, dealing with both levels does not mean one precludes the other, rather that both are necessary for a proper process of planning.

18 The examples illustrate how to bring a theoretical approach to the brink of absurdity rather than a desire on my part to indicate the weaknesses of the cognitive approach specifically.