

**THINKING CRITICALLY ABOUT CRITICAL THINKING:  
A FUNDAMENTAL GUIDE FOR STRATEGIC LEADERS**

Colonel Stephen J. Gerras, Ph.D.  
Director, Leadership and Command Instruction  
Department of Command, Leadership, & Management  
U.S. Army War College

June 2006

The views expressed in this paper are those of the author and do not reflect the official policy or position of the Department of the Army, Department of Defense, or the U.S. Government.

## THINKING CRITICALLY ABOUT CRITICAL THINKING: A FUNDAMENTAL GUIDE FOR STRATEGIC LEADERS

“Technological advances alone do not constitute change. The most dramatic advances in military operations over history have been borne of ideas – ideas about warfighting, organization and doctrine. The Army’s most critical asset will not be technology; it will be critical thinking.”<sup>1</sup>

AUSA Torchbearer National Security Report, March 2005

“Most Army schools open with the standard bromide: We are not going to teach you what to think...we are going to teach you how to think. They rarely do.”<sup>2</sup>

BG David A. Fastabend and Robert H. Simpson, February 2004

In the post Cold War security environment many senior leaders in the Army and throughout the Department of Defense have asserted a need to develop better critical thinking skills.<sup>3</sup> The requirement for better critical thinkers stems from a realization that the complexity, uncertainty, and ambiguity characteristic of the current environment mandates a need to refrain from Cold-War thinking methodologies and assumptions. As the epigraphs (above) suggest, there is a large gap between the Army’s desire to develop critical thinking skills and what actually happens. This gap is due not only to a general lack of understanding of what critical thinking is, but also a lack of education by both faculty and Army leadership on how to develop critical thinkers.

The purpose of this paper is to analyze the concept of critical thinking and then make suggestions for how the Army can close the gap between the need to develop critical thinkers and what is actually happening. This paper is not just for Training and Doctrine Command (TRADOC) organizations; rather, it is to serve leaders throughout the Army in their efforts to develop their own critical thinking skills, while creating a climate that develops the same skills in their subordinates. This document is a user’s guide to critical thinking. Most of the contexts, examples, and recommendations are Army-centric, although everything in this paper is applicable to all military services and governmental organizations.

One of the main impediments to the robust understanding and use of critical thinking, both inside and outside the military, centers on a lack of a common definition. No one discipline owns the construct. Most of the material about critical thinking derives from philosophy, education, and psychology.<sup>4</sup> There are, however, competing schools of thought on what critical thinking is and how to best develop it. In most cases a multidisciplinary assessment of a topic

leads to a richer body of research, however, in the case of critical thinking it seems to have led to competing and incomplete views of the topic. My goal is not to evaluate various views of critical thinking. Instead, I hope to provide a guide with which to enhance an individual's critical thinking skills.

As a starting point, I will use Diane Halpern's broad definition of critical thinking as a foundation: "Critical thinking is the use of those cognitive skills or strategies that increase the probability of a desirable outcome. It is used to describe thinking that is purposeful, reasoned, and goal directed."<sup>5</sup> In essence, critical thinking is about improving one's judgment. Whether we are evaluating the information on a power point slide in a Pentagon briefing, reading a newspaper article, or participating in a discussion with an Iraqi mayor, critical thinking is the deliberate, conscious, and appropriate application of reflective skepticism. Some Army leaders refer to the "critical" in critical thinking as mere fault finding with either a conclusion or the process by which a conclusion was reached. Fault finding is not what critical thinking entails. The word "critical" really has to do with purposeful, reflective and careful evaluation of information as a way to improve one's judgment.

The question is, "How do we develop these judgment skills in Army leaders?" One way is to teach logic and reasoning skills that are typically the focus of philosophy. Another way is to emphasize questioning and self-reflection skills that are usually the focus of education and psychology.<sup>6</sup> Additionally, there are generally two schools of thought on how to develop critical thinking skills: context-free and context-dependent. Context-free development focuses upon teaching critical thinking skills irrespective of any specific subject. Context-dependent development centers on teaching the same skills but with a particular field of study. Based on my experience at the War College, I think the best way to teach critical thinking skills to military leaders is to provide context-dependent skill development that incorporates both the critical reasoning contributions of philosophy with the questioning and self-reflection focus from the fields of education and psychology.

Therefore, I argue that critical thinking skills are best developed by: (1) providing knowledge from a multidisciplinary perspective about critical thinking skills, (2) practicing the application of these skills in a context-dependent setting under the purview of a facilitator or knowledgeable leader, and (3) creating a healthy environment, in both TRADOC schools and organizational units, that encourages and motivates a desire to routinely apply critical thinking skills to important issues. The next section of this paper describes a general model that serves as a starting point for developing a lexicon, context, and mental template for the development and application of critical thinking for developing strategic leaders.

## A Critical Thinking Model

This paper provides a model and accompanying terminology to inform the military community of a way to look at critical thinking. Whether in a lunchtime conversation with a friend about democracy in the Middle East, or developing courses of action in Iraq within the structure of the military decision making process (MDMP) a well-developed critical thinker will mentally ensure his thought process is not proceeding down the road without due application of reflective skepticism. Renowned critical thinking experts Paul and Elder assert:

A well-cultivated critical thinker raises vital questions and problems, gathers and assesses relevant information, and can effectively interpret it; comes to well-reasoned conclusions and solutions, testing them against relevant criteria and standards; thinks open-mindedly within alternative systems of thought, recognizing and assessing, as need be, their assumptions, implications, and practical consequences; and communicates effectively with others in figuring out solutions to complex problems.<sup>7</sup>

The model offered here is a derivative of the Paul and Elder model, with significant additions and clarifications centered in the 'evaluation of information' element. The elements of the model are:

CLARIFY CONCERN,  
POINT OF VIEW,  
ASSUMPTIONS,  
INFERENCES,  
EVALUATION OF INFORMATION, and  
IMPLICATIONS.

Picture yourself as an armored brigade commander recently deployed to Iraq. Your predecessor informs you that in your Area of Operations over the past two months the number of civilians killed from improvised explosive devices/vehicle-borne improvised explosive devices (IEDs/VBIEDs) is twice the average of any sector in the country. He advises that his brigade has increased their vigilance and number of patrols in susceptible areas, but due to unit redeployment challenges, they have not really done much differently to improve the situation. As the brigade commander, you direct your staff to present some options for reducing the number of civilian deaths.

As the brigade commander thinks about how to reduce civilian deaths, he will be much more effective if he reasons within the framework of some critical thinking model. The critical thinking model presented is not meant to be a completely sequential process. As mentioned earlier, it is a derivative of the elements of reasoning presented by Paul and Elder.<sup>8</sup> Although the model starts with the element CLARIFY CONCERN, the model is not necessarily linear. It is

more important that critical thinkers process information and reason within the vocabulary of the model, than it is that they rigorously adhere to the model in any lock-step systematic pattern. This point will be made clearer later.

Critical thinking is purposeful, directed thought. It is not easy, as it requires explicit mental energy. The great majority of the decisions and issues we face throughout the day do not require critical thinking. The route we drive to work, what clothes we wear to a party, and what book to read on Saturday are examples of decisions or concerns that do not normally require critical thinking and can be made in an “automatic” mode of cognitive thought. What is an “automatic” mode of cognitive thought? If you have ever driven down the Interstate at 70 miles per hour and at some point recognized that you are not quite sure where you are or do not actually remember driving the last five miles it is probably because your mind is in a kind of automatic processing mode. Most people have had this experience. How is it that our brains will permit us to operate a 5000 pound vehicle, moving at 70 miles per hour, within several feet of large tractor trailers moving equally fast? The explanation is that over time, driving even at a high rate of speed has become an “automatic” routine. To conserve mental energy our brains tend to reduce focus, especially with seemingly routine activities. Unfortunately, most decision makers make judgments on significant issues using an “automatic” mode as opposed to taking the time and investing the energy for a more “controlled” thought process.<sup>9</sup> Exercising controlled thought involves the deliberate use of elements of critical thinking. Examples of when critical thinking are probably called for include assessing a Power Point presentation on courses of action for an upcoming military operation, preparing to meet with an Iraqi governor to discuss joint security issues, and proposing to your future spouse. Knowing when to reign back on automatic processing in order to conduct a conscious assessment of the parameters of the situation is more art than a science. But it is almost certainly safe to say that “if you’re in doubt as to whether to conduct critical thinking on an issue, you probably ought to apply critical thinking.” The main point is that most routine decisions that we make on a day-to-day basis do not involve critical thinking; however, once you become familiar with the concepts and terminology of critical thinking, you should habitually ask yourself whether the issue being considered warrants the application of critical thinking methodology.

The model portrayed in Figure 1 will be discussed in detail throughout the remainder of the paper. There are, however, some points that require highlighting. First, the clouds in the center, POINT OF VIEW, ASSUMPTIONS, and INFERENCES, are meant to demonstrate that this is generally a non-linear model. Your ASSUMPTIONS, for instance, will affect whether you perceive an issue to be worthy of critical thinking and your POINT OF VIEW will impact how you

define the boundaries of the issues. Although there are arrows going from CLARIFY CONCERN to EVALUATE INFORMATION (implying linearity), there is also a reciprocal arrow going in the reverse direction to suggest that as you are EVALUATING INFORMATION, you may end up redefining the concern. If, for example, you are seeking to CLARIFY CONCERN regarding some inappropriate behavior by your teenage son or daughter, the EVALUATION OF INFORMATION may indicate that the “real” issue has to do more with the nature of the relationship between you and your child than the actual behavior prompting initial concern. The non-linear nature of the model will be more evident as you read about the components.

The model starts with an individual perceiving some stimulus. As mentioned before, we oftentimes respond to the stimulus by defaulting to our known view of the world, which is an “automatic” response. In most cases, the automatic mode is appropriate and the perceiver should proceed to make a decision, use judgment, etc. However, if the topic is complex, has important implications, or there is a chance that strong personal views on the issue might lead to biased reasoning, then thinking critically about the issue makes good sense.

A critical element, and often the first step, in critical thinking methodology is to CLARIFY the CONCERN. For anyone familiar with the Paul and Elder model, this element is an aggregation of their elements: Purpose and Central Problem.<sup>10</sup> This is not as straightforward as it seems.

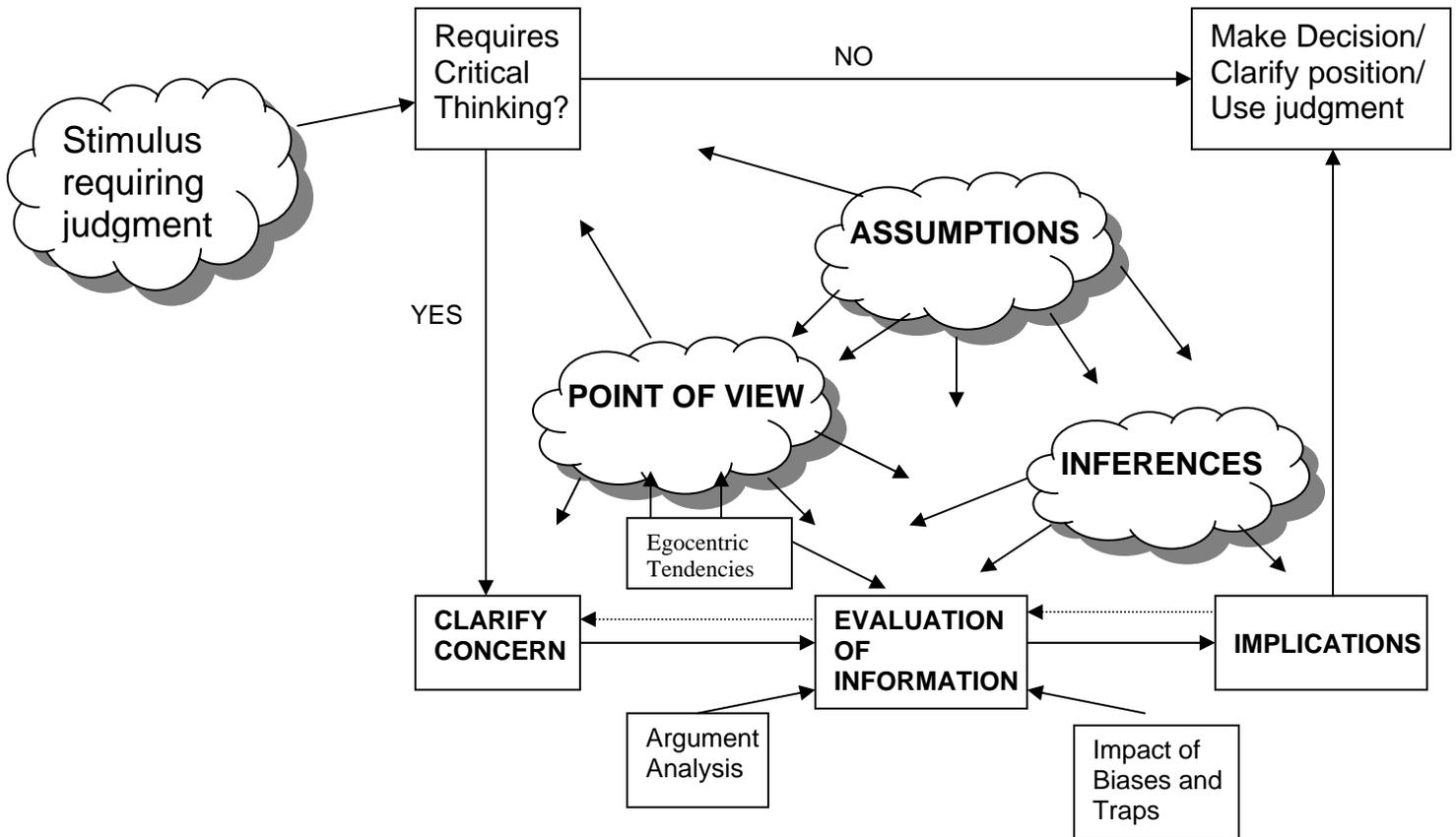


Figure 1 A Critical Thinking Model

The problem or issue needs to be identified and clarified up front, yet consistently revisited as other elements of the model are considered. The term ‘concern’ is preferred over the term ‘problem’ because a critical thinker must be proactive as well as reactive. In many cases, the critical thinker will encounter information that causes him to identify related or subsequent issues that should be addressed. A critical thinker ensures that he has considered all the complexities of the problem at hand and focused his mental energy appropriately. An assessment needs to determine whether the concern has unidentified root causes or unaddressed sub-components. A critical thinker must ensure that the problem or issue is not framed in a way that unduly limits response options. In the case of the new brigade commander in Iraq, a cursory attempt at concern clarification would probably conclude the concern is that the average number of civilians killed over the last two months is much higher than anywhere else in country. From a critical thinking perspective, however, the brigade commander should also be asking questions like, “Where are the data coming from? Are there other motivations for the people presenting the data that may be improperly framing the issue? Is there a more systemic issue or problem that has caused this increase in deaths that needs to be addressed

before we focus on the IED/VBIED attacks?” As an example, at a recent War College presentation by a General Officer returning from Iraq, the General described a situation in which his command, in an effort to identify the root causes of attacks in their area of operation, eventually figured out that there was a strong inverse correlation between functioning civil infrastructure such as electrical power, sewer, and water service and the number of attacks in that sector. As a result, in an effort to improve stability, the unit focused on civil infrastructure improvement as well as offensive military operations.

Additionally, as mentioned earlier, as the brigade commander thinks about the other elements in the model (e.g., ASSUMPTIONS, INFERENCES, EVALUATION OF INFORMATION), he needs to revisit the CLARIFY CONCERN step to ensure that the correct issue is being addressed. For instance, while conducting an evaluation of information, the brigade commander might realize that while the average number of deaths has increased in the last two months, this high average is driven by only two significant attacks when VBIEDs exploded near buses. In fact, the actual number of attacks had decreased significantly. This evaluation of information from a critical thinking standpoint might lead to a re-labeling the concern from “how to reduce the average number of civilian deaths in the AO” to “how to reduce the number of VBIED attacks in populated areas or how to protect the civilian population from terrorist attack.” Each has a unique answer. For complex questions, we want to limit the scope of a problem to be addressed – or, at least, to be very deliberate that we are scoping correctly.

Another element of the critical thinking model is POINT OF VIEW. Paul and Elder posit that, “Whenever we reason, we must reason within some point of view or frame of reference. Critical thinkers strive to adopt a point of view that is fair to others, even to opposing points of view.”<sup>11</sup> Assessing an issue from alternative points of view is sometimes very difficult for War College students. By the time an accomplished lieutenant colonel or colonel has reached this level, they are inclined to believe that they have figured out how the world works, and, moreover, that their view is correct. Many would argue that our General Officer community is prone to the same myopia. Good critical thinkers, however, do their best to recognize their own point of view, and to consider and even understand and empathize with the view of other’s on an issue. Empathy is not a characteristic of “soft leaders;” rather, it is a characteristic of smart, thoughtful, and reflective leaders. The more the infantry battalion commander can put himself in the shoes of the town mayor, the greater the likelihood that his decisions will be successful from not only a U.S. standpoint, but from an Iraqi perspective as well. This congruence will enable long-term solutions and build respect and trust that is absolutely critical in the contemporary operating environment. Noted leadership developer Bruce Avolio asserts, “Leadership

development is fundamentally a shift in perspective...The shift occurs when you stop to reflect on an opponent's view to fully understand how he or she can believe the position he or she has taken and then refused to move from that position."<sup>12</sup>

As we attempt to empathize with the viewpoint of others our own self awareness becomes increasingly important. Leaders need to be self-aware of the **egocentric tendencies** that are probably the most significant barrier to effective critical thinking.<sup>13</sup> Military officers, for instance, are typically very successful individuals who have a wide range of interests. From academics to sports, leadership jobs to hobbies, a typical officer has in most cases been hand-picked for military commissioning and advancement based on a track record of success. Therefore, typical military leaders have exceptional confidence with respect to both who they are and the validity, accuracy and correctness of their views. This enhanced confidence only increases as rank and responsibility increase because the senior leaders have been continuously rewarded for their judgment and decision-making. Unfortunately, as we see at the War College on a daily basis, this constant positive reinforcement, in the form of promotion and selection for key billets, encourages an absolutist frame of reference within an overly narrow point of view. As mentioned earlier, War College students very often think that they have figured out how the world works and they are exceedingly confident that their view is correct. This egocentric leaning tends to insulate leaders with regard to their actual thinking processes and often presents a significant obstacle to empathizing with and considering the viewpoint of others.

Paul and Elder describe several egocentric tendencies that are relatively common in military culture. Egocentric memory is a natural tendency to forget information that does not support our line of thinking. Egocentric myopia refers to thinking within an overly narrow point of view. Egocentric righteousness describes a tendency to feel superior based on the belief that one has actually figured out how the world works. Egocentric blindness is the natural tendency not to notice facts and evidence that contradict what we believe or value.<sup>14</sup> Fortunately, just as egocentrism can prevent us from appreciating the underlying thinking processes that guide our behavior, critical thinking, especially in the form of appreciating multiple points of view, can help us learn to explicitly recognize that our point of view is always incomplete and sometimes blatantly self-serving and wrong.<sup>15</sup>

As critical thinkers assess the point of view of someone presenting information to them, they not only need to be aware of their egocentric tendencies, and attempt to empathize with the various other relevant points of view, they also need to apply some measures of critical reasoning to the assessment. As an example, when a brigade commander is presented with

recommendations for a courts-martial by a subordinate unit, it is probably smart to evaluate who the recommender is, ask yourself what biases they bring to the issue (based on past statements or previous recommendations), ask yourself if there are any factors which might interfere with the accuracy of this person's judgment, and also probably query the environment to see if there is evidence from any other source that corroborates this person's statements or recommendations.<sup>16</sup> This assessment protocol would apply to any information source, whether that source is face-to-face, in written text, or via the public media.

A third component of the model is ASSUMPTIONS. This is a concept that should be very familiar to a military officer. An assumption is something which is taken for granted.<sup>17</sup> Within the scope of critical thinking, however, the concept of an assumption is somewhat different than that which we use to provide boundaries in the military decision making process. As critical thinkers, we need to be aware of the beliefs we hold to be true that have formed from what we have previously learned and no longer question.<sup>18</sup> We typically process information based on assumptions about the way the world works that are ingrained in our psyche and typically operate below the level of consciousness. We have assumptions about fat people, late people, blonde women, and barking dogs. These are sometimes referred to as mental models or schemas. The brigade commander in Iraq makes inferences, forms opinions, and makes decisions that are largely rooted in his assumptions about cause-effect relationships with respect to the way the world works. He probably has assumptions about the way people should interact, about what a good leader looks like, about how a typical town should appear (in terms of organization and cleanliness), and about how responsible an individual is for what happens in his or her life. All of these assumptions and many more will affect his judgment with respect to possible courses of action for dealing with increased civilian casualties. The arrows in the model show that assumptions influence all aspects of the model: our Point of View, Inferences, whether we decide a problem is worthy of critical thinking, and many other components of our thought processes. The more in touch an individual is with his assumptions, the more effective a critical thinker he will be.

If the brigade commander, for example, assumes that the primary cause of most of the problems in Iraq is a lack of willingness by the populace to effect a solution, he will evaluate the efficacy of courses of action with this assumption in mind. He might not support any course of action that relies on the Iraqis. Whether or not this is an accurate assumption is, in fact, irrelevant. What matters is that the brigade commander implicitly draws upon his assumptions as part of the critical thinking process. More importantly, the brigade commander needs to create a command climate where subordinates feel they can surface and question assumptions

they believe are relevant to the concern at hand. Peter Senge in his seminal book The Fifth Discipline highlights the importance of dialogue, as opposed to discussion, in a learning organization. He posits, "In dialogue, a group explores complex difficult issues from many points of view. Individuals suspend their assumptions but they communicate their assumptions freely."<sup>19</sup> In order to suspend assumptions, leaders must first be aware of them. This reflective self-inquiry, in relation to a specific concern, is extremely important in the critical thinking process, as is the creation of a climate in which individuals feel free to communicate their assumptions and to question others.

Another component of the critical thinking model that needs to be considered is INFERENCES. Critical thinkers need to be skilled at making sound inferences and at identifying when they and others are making inferences. An inference is a step of the mind, or an intellectual leap of faith, by which one concludes that something is true in light of something else being true, or seeming to be true.<sup>20</sup> Whereas an *assumption* is something we take for granted, an *inference* is an intellectual act in which we conclude something based on a perception as to how the facts and evidence of a situation fit together. If a soldier sees an Iraqi man approaching with his hands hidden behind his back, he may infer that the man is probably hiding a weapon and intends to do him harm. This inference is based on the assumption that Iraqi men who hide their arms when approaching are very likely dangerous and quite probably insurgents or terrorists.

Critical thinkers strive to become adept at making sound inferences.<sup>21</sup> Ask yourself, "what are the key inferences made in this article, presentation, etc.?" Then ask yourself if the inferences are justified, logical and follow from the evidence. Remembering the earlier components of the model, obviously, inferences are heavily influenced by the Point of View and Assumptions we bring to the issue. This explains why two officers viewing the same power point slide, an information source, may come to completely different conclusions in terms of what the data means or represents. An interesting exercise I do at the War College to make this relationship more salient is to provide students brief information, and then ask them to identify their inferences and underlying assumptions. This exercise never fails to show that people make very different inferences from the same stimulus, and as would be imagined, these inferences are based on very diverse assumptions. Once these assumptions are identified, they, along with the inferences, can be questioned, examined, and discussed.

In terms of our Brigade Commander in Iraq it is easy to see the importance of inferences. As an example, if an Iraqi informant tells the a Brigade interpreter that the local police captain is aligned with the terrorists, the Brigade Commander may infer that this

information is useless and therefore direct that no action be taken on the intelligence. In this case the commander's underlying assumption that informants are untrustworthy and typically lie impacts his inference and subsequent directive. The Brigade S-3, however, may have a different assumption about the efficacy of informant intel and might think the correct course of action will involve bringing the police captain in or at least putting him under observation. From a critical thinking perspective, both the commander and the S-3 should be aware that they are each making an inference based on an underlying assumption. They should question their underlying assumptions and ensure that other equally valid considerations have been entertained before drawing inferences from the available information.

Although many of the components of the critical thinking model derive from Paul and Elder's work, the essential strength of this paper, and my view of critical thinking, focuses on how we evaluate information. This part of the paper is rooted in literature dealing with managerial decision-making and philosophy. The following sections are not meant to de-emphasize that, when evaluating information, critical thinkers need to assess the validity of concepts, policies, information, evidence, and data; rather, I suggest that this process needs to occur with the critical thinker alert to the impact of biases and logical fallacies described below. As a member of the War College faculty I am surprised at how often students are deceived by information. The next step in the model is: EVALUATION OF INFORMATION. In this section I will describe how military officers typically evaluate information and make decisions using the Military Decision Making Process (MDMP). I will then discuss the shortcuts humans habitually take that often lead to decision making biases. Finally, I will overview many of the logical fallacies that undermine information evaluation.

### **Rationality and the MDMP**

The Military Decision Making Process is a rationally-based tool that usually leads to an effective decision. As leaders, decision-making is a key characteristic of our job description and it carries a significant burden for evaluating mounds of data and information, preparing creative alternatives for evaluation, and then prioritizing and weighting assessment criteria capable of identifying the best decision. Effective officers recognize that decision making is one of those challenges that benefits from critical thinking.

MDMP and any rational decision making model are typically rooted in several assumptions. First, the model assumes that the problem or goal is clearly definable. Second, the information that is required to make a decision is available or can be acquired. Third, there is an expectation that all options generated can be adequately considered, compared, and evaluated to identify an optimal solution. Fourth, the environment is presumed to be relatively

stable and predictable, and finally, there is sufficient time for working through the decision making processes. Much research has been conducted on how people actually make decisions, especially under circumstances of high pressure, short timeframes, and with ambiguous, unpredictable information. Nobel laureate Herbert Simon<sup>22</sup> proposed the term “bounded rationality” to describe the condition in which the limitations just noted cause decision makers to make seemingly irrational decisions (or at a minimum, sub-optimized decisions that simply have to do with negotiating constraints that restrict a fully rational framework (e.g., MDMP). Such irrational decisions typically result from a reliance on intuitive biases that overlook the full range of possible consequences. Specifically, decision-makers rely on simplifying strategies, or “general rules of thumb” called heuristics, as a mechanism for coping with decision-making in the volatile, uncertain, complex, and ambiguous (VUCA) environment. Critical thinkers need to not only appreciate the framework for assessing their own thinking, but also need to appreciate the heuristics that most people rely upon when making decisions. The concept of heuristics relates strongly to the “automatic” mode of cognitive thought described earlier.

Heuristics as aids to decision making are not bad; in fact, if we did not use heuristics we would probably be paralyzed with inaction. As an example, you might have a heuristic for which coat to wear to class each day. Your heuristic might be, “if there’s frost on the car, I wear the parka.” Without this heuristic short cut, you would have to check the thermometer and compare it to a chart that prescribed the correct coat to wear under certain temperature conditions. Heuristics help leaders to make good decisions rapidly a significant proportion of the time. Unfortunately, however, heuristics also can lead decision makers into making systematically biased mistakes. Cognitive bias occurs when an individual inappropriately applies a heuristic when making a decision.<sup>23</sup> As critical thinkers, we need to be aware of cognitive biases in order to more effectively evaluate information. In addition to the heuristics presented below, critical thinkers need to assess whether the premises of the argument (yours or someone else’s) are true or false, and may possibly lead to a fallacious argument or a wrong decision. Identifying unacceptable, irrelevant, and insufficient premises serves to advantage critical thinkers in evaluating arguments for fallaciousness.

### Biases and Heuristics

Three general heuristics are typically described in the psychology and management literature: (1) the availability heuristic, (2) the representativeness heuristic, and (3) the anchoring and adjustment heuristic.<sup>24</sup> Each is briefly elaborated below.

The availability heuristic acknowledges that people typically assess the likelihood of an event by the ease with which examples of that event can be brought to mind. Typically, people

will recall events that are recent, vivid, or occur with high frequency. This heuristic works well in most instances; however, a critical thinker needs to be aware of the biases that result from expeditious process. For example, a Division Commander doing Officer Efficiency Reports (OERs) on two equally capable battalion commanders might be inclined to give the battalion commander who challenged him at the last Unit Status Report (USR) a lower rating. The recentness and vividness of the challenge might cause the Division Commander to overlook the impressive accomplishments of this particular battalion commander and accord a rating that is actually inconsistent with the officer's performance. This would be, in effect, a poor decision.

Reconsider our brigade commander in Iraq. Imagine that on the morning prior to his staff brief on possible courses of action to deal with the terrorist threat he has a conversation with a brigade commander from a sister division. In that discussion the other brigade commander mentions that the only successful way he's been able to deal with terrorist attacks is to increase his information operations campaign by providing accurate information of terrorist attacks through the local mosque. The brigade commander will then process information during the staff brief with the comments of the sister brigade commander at the forefront of his thoughts. This may or may not lead to a good decision. What is important is that the brigade commander understands this tendency to process information within the context of like-situations that can be easily recalled from memory. The environment and circumstances in his brigade sector may not be at all conducive to the same solution as in the sister brigade. Critical thinking and self-reflection can help prevent this error.

At the strategic level, it's easy to posit the influence of the availability heuristic in the early years of American involvement in Vietnam. Decision makers had recent and vivid impressions of the failure of appeasement in WWII and the success of Korea to serve as a basis for imagining likely scenarios if the U.S. did, or did not, get involved in Vietnam. In regards to decision making and Iraq, it could be argued that Americans inappropriately applied the relatively peaceful conclusion to the Cold War and apparent ease of democratic change in the Eastern-Bloc countries to the Middle East, where democratic change will be anything but easy. This can be explained, at least in part, by the availability heuristic.

The representativeness heuristic focuses on the tendency for people to make judgments regarding an individual, object, or event by assessing how much the item of interest is representative of a known item. Several biases emanate from this heuristic; two of the most prevalent are insensitivity to sample size and regression to the mean.

Sample size bias occurs when decision-makers improperly generalize the reliability of sample information. An example of this tendency is illustrated here: The 1<sup>st</sup> Battalion had three

attempted suicides last month. There are 300 soldiers in the battalion. The 1% attempted suicide rate in this battalion for this month is four times the Army average and ten times the national average over a one month period. The Division Commander concludes that there is clearly a problem in the 1<sup>st</sup> Battalion. Unfortunately, this reasoning is all too common, yet most likely incorrect because a 300 soldier-unit over a one month period is too small a unit and too short a time period to draw a meaningful conclusion that there is actually a problem. In the Abu Ghraib incident, many would argue that Congress, the international community, and some of the American populace unfairly generalized the behavior of a few soldiers to the entire American Army. From the other angle, we have all seen the Commander's Inquiry saying that the reason for the poor decision making by the soldiers involved in the incident was due to lack of training. The net result is that six months later the entire Army is sitting through chain teaching on one subject or another, despite the fact that the actual incident was limited to a very small group of violators.

In our Iraq example, imagine a battalion commander briefing the brigade commander and saying, "I placed our Raven Unmanned Aerial Vehicle (UAV) under the control of the company commanders and yesterday it enabled us to take out three bad guys." There might be a tendency of the brigade commander to then recommend this solution to the other battalions when, in fact, this success is based on one day and one event. If two battalions had said they had tried this technique and that it had worked 15 or 20 times in the last couple of weeks, then the sample size would have been large enough to conclude that this was definitely a viable solution. Recognize, too, that this bias does not mean that we should not try new techniques even if we have a small sample size; rather, it is meant to highlight that there are significant risks that a critical thinker needs to be aware of when generalizing a one-time incident to an entire population or environment.

Another bias related to the representativeness heuristic is regression to the mean. This bias is based on the fact that extreme high or low scores tend to be followed by more average scores. Therefore, when predicting future performance, decision-makers assume poor performers will stay poor (i.e., they are representative of poor performers) and strong performers will stay strong. Unfortunately (or fortunately), extremely low or high performance will typically be followed by a performance level closer to average. This is why the sports teams that make the cover of Sports Illustrated tend to lose, and the mutual fund that was the strongest performer last year is probably not the one to buy this year. An awareness of regression to the mean for our brigade commander in Iraq would hopefully cause him to investigate to determine "why" there has been an increase in attacks. If no apparent cause

exists for the increase, a critical thinker might be a little more patient before reprioritizing resources to address a problem that will level out in the near future, and may in fact not be the most pressing issue faced by the unit at the current time. Applying regression to the mean at the strategic level enables a better assessment of OIF casualty data. In the first ten days of April of 2006, there were thirty combat deaths. The media highlighted that this number already exceeded the combat deaths from March of 2006, implying an increase in the intensity of the war. A critical thinker, however, would note that the March 2006 casualty numbers were the lowest in two years; hence, regression to the mean would probably be a better explanation for the April numbers than automatically assuming the intensity of the war had increased significantly.

Biases derived from anchoring and adjustment include insufficient anchor adjustment and overconfidence. In terms of anchoring, research has shown that decision-makers develop estimates by starting from an initial anchor, based on whatever information is provided, and adjusting from there to yield a final answer.<sup>25</sup> Military personnel have mastered this bias. For a host of reasons, probably closely associated with constant personnel turnover and a lack of total knowledge about a specific job due to constant Permanent Change of Station (PCS) moves, military personnel base estimates “on last year’s numbers.” Whether we’re talking about a unit’s budget, how long a war will take, or how many casualties we will have, we use previous numbers and experience as an anchor and adjust accordingly, rather than use current information to develop a value. A practical application of ways to deal with this bias can be seen in negotiations. It is usually good to initiate the first offer in a negotiation if you have reasonable belief that you understand the bargaining zone. The opening offer will serve as the anchor and will most likely create a range for possible negotiation that will be more advantageous to you.

In our Iraq scenario, the brigade S-3 might tell the commander that the previous brigade conducted 15 patrols a day in the southern sector. Fifteen patrols will thus become an anchor. The courses of action for dealing with the terrorist situation might, therefore, include a recommendation to increase the number of patrols to 20 a day. A critical thinker, however, will realize that the 20/day recommendation is based on the anchor of 15 from the previous unit. He would then ask “why 20; why not 60 or why not 4?” to force his staff to re-assess the troop to task requirements afresh.

Overconfidence describes a bias in which individuals tend to be overconfident of the infallibility of their judgments when answering moderately to extremely difficult questions. As an example, when receiving a briefing from a subordinate and you ask him to estimate the probability of an event occurring, keep in the back of your mind that this probability is inflated. If

the subordinate says, “sir, we have a 90% probability of eliminating all the enemy in the city,” a critical thinker will remember this bias and assume that a more realistic estimate would be substantially lower. The Army’s “can do” culture, tends to reinforce the subordinate commander’s over-inflated estimates as proxy measures of confidence in the command – and they might be completely wrong, or right.

#### Other Biases, Traps and Errors

The confirmation trap describes a condition in which people tend to seek confirmatory information for what they think is true and either fail to search for – or discard inconsistent and disconfirming evidence. This bias highlights the need for subordinates to provide candid feedback to their superiors, and more importantly, for superiors to encourage their subordinates to give them all the news – good or bad. Failure to make a concerted effort to be absolutely candid will typically lead to a situation in which the boss looks for information that supports his decision, while discounting information, no matter how valid and important, that challenges his decision. As critical thinkers evaluating an issue, we need to appreciate this bias and know that it’s a natural tendency that we need to overcome, no matter how painful it is on our ego (yes, this bias is clearly related to egocentric tendencies such as egocentric memory and blindness). At the strategic level, the Bay of Pigs decision by the Kennedy Administration is a poster-child for the confirmation trap. Similarly, in 2004 it was not hard to find a Sunday morning talk show pundit arguing that it was almost certainly the case that, once they were persuaded that Iraq had WMD, President Bush and Prime Minister Blair placed more weight on evidence that supported their position than on that which challenged it (i.e., Hans Blix’s view). They may have tried to keep open minds, but once committed to what you see as the truth, it becomes very hard to assess all the evidence impartially.

If our Iraq brigade commander believes that the increase in attacks is due to guidance from the local Imam, he (and probably his direct-reports) will have a tendency to search for information that supports this perspective. He will also be inclined to discount valuable information that might lead to another cause.

The fundamental attribution error describes a phenomenon in which people tend to have a default assumption that what a person does is based more on what “type” of person he is, rather than the social and environmental forces at work in that situation. This default assumption causes leaders to sometimes attribute erroneous explanations for behavior to a person when the situation/environment provides a better explanation. When a soldier comes late to work, our first thought is “that individual doesn’t care/is incompetent, etc.” when in fact he or she could have a perfectly acceptable reason for being late. At the strategic level, an

example of this would be a conclusion that the reason the critical negotiation failed is because General Jones blew it, as opposed to attributing the failure to the large range of environmental conditions that were more likely to have caused the failure.

Similarly, we are more likely to attribute our successes to internal factors and our failures to external factors. This is the self-serving bias. When we ask our child why he did poorly on a test, he responds that “the teacher asked questions that weren’t in the book;” if we ask him how come he received an “A,” he’ll say “because I’m smart.” Similarly, a person not selected for promotion is more likely to say, “the system is broken,” than “I’m just an average performer.” In his book, *Good to Great*, Jim Collins looks at those factors that allow good companies to turn into great companies.<sup>26</sup> Collins asserts that the leaders of the comparison companies ( those that did not make the list of great companies) tend to “look out the window for something or someone outside themselves to blame for poor results, but would preen in front of the mirror and credit themselves when things went well.”<sup>27</sup> When processing issues and questions, critical thinkers understand that the bias to accept responsibility for success while attributing failure to other sources permeates human cognition (and again, this is related to egocentric tendencies).

#### Critical Reasoning/Logical Fallacies

Besides developing an understanding of biases and heuristics as a means to improve one’s ability to evaluate information critically, a strong critical thinker will also assess the soundness of the arguments presented. This aspect of critical thinking is strongly rooted in the field of philosophy. For the purpose of this paper, I will keep this section at pragmatic levels and not focus primarily on the difference between deductive and inductive reasoning or how to evaluate the veracity of syllogisms. Rather, based on my Seminar experience at the US Army War College, I will describe the nine most common errors students make in constructing and evaluating arguments.

When we make an argument we offer reasons as to why others should accept our view(s) or judgment. These reasons are called premises (sometimes evidence) and the assertion that they allegedly support is called the conclusion.<sup>28</sup> A sound argument meets the following conditions: (1) the premises are acceptable and consistent, (2) the premises are relevant to the conclusion and provide sufficient support for the conclusion, and (3) missing components have been considered and are judged to be consistent with the conclusion.<sup>29</sup> If the premises are dubious or if they do not warrant the conclusion – then our argument is fallacious.<sup>30</sup> Unfortunately, as I see in the daily conversations among senior field grade officers at the War College, logically fallacious arguments can be psychologically compelling. Officers, since they have never really learned the difference between a good argument and a fallacious

one are often persuaded to accept and believe things that are not logically supported. As critical thinkers evaluating information, you need to ask yourself: Are the premises acceptable? Are they relevant? Are they sufficient? If the answer to any of these questions is no, then the argument is not logically compelling. What follows are the nine most common logical fallacies I have observed in the military context.

*Arguments against the person.* When someone tries to attack the person presenting an argument and not the argument itself, they are guilty of this fallacy. A common War College example of this is the denigration of a position with the statement “That guy is just a left-wing liberal.” Instead of assessing the argument or position based on the premises and conclusion, the argument is ignored and the arguer is attacked. Our new brigade commander in Iraq during a battle update briefing might discard some important intelligence because the briefer highlighted the negative aspects of the intelligence source over the content of the intelligence. Awareness of this fallacy should cause critical thinkers to constantly be aware of their own biases and prejudices to ensure that they do not fall victim to a seemingly convincing argument that is, in reality, based on an unsupported attack on a person or group advancing the information.

*False Dichotomy.* When someone presents a complex situation in black and white terms, i.e., they present only two alternatives when many exist, they are committing the fallacy of false dichotomy. Military officers often present information this way. “Sir, we can either commit the ten million dollars to force protection or start preparing our response to ‘60 Minutes’ when our troops get blown up.” This illustrates a false dichotomy. In this case, there is a wide range of other alternatives (spend 3 million dollars, for instance) that are not presented in this argument. As we work to develop more innovative and creative leaders, the ability to identify false dichotomies becomes even more important. Rather than reducing complex issues to a choice between two extreme positions, critically thinking leaders need to use their creative juices to identify the wide range of possible alternatives that are actually available. Our brigade commander may be briefed, “Sir, we either provide the security for the protest Sunday or pre-place evacuation vehicles for the guaranteed terrorist attack.” In reality, there is a large continuum of courses of action to include having the U.S. provide outer-ring security while the Iraqis provide local security.

*Appeal to Unqualified Authority.* This fallacy occurs when the authority we use to support our premises is the wrong authority for the matter at hand. In the hierarchical and rank-centric military, this is an especially salient fallacy. Although either a Command Sergeants Major or a General Officer is knowledgeable about many things, in many cases neither one may

be an expert on some particular issue. Yet, there is a tendency to communicate their position on an issue as evidence with which to support our position. Many active duty military are frustrated when 24-hour news channels, for instance, feature a retired Army General discussing the efficacy of the Air Campaign in Kosovo or a long-retired Special Forces Major assessing the problems with the current ground campaign in Falluja being fought by the Marines. Unfortunately, the American public at large does not understand military rank structures, nor do they understand the tenuous link that a retired Special Forces Major has with what is actually going on anywhere in Iraq. The net result is the many people are misled by appeals to unqualified authorities and hence are convinced of the validity of what is, in fact, a fallacious argument.

*False Cause.* This is a common fallacy in which someone argues that because two events occurred together and one followed the other closely in time, then the first event caused the second event. Night follows day, but that does not mean that day “caused” the night. Similarly, just because attacks in an Iraqi city decreased the day after a new President was elected in the U.S. one should not infer that the U.S. Presidential election caused the decrease in attacks. They are probably completely exclusive. Without getting into a description of scientific methodology, suffice it to say that there are many reasons one event may follow another, yet bear no causal relationship. We have all seen the case where a new leader comes into the unit and the unit does much better or much worse on a measurable evaluation (gunnery, Command Inspection, etc.). We almost always assume the positive or negative change is due to the new leader, when in fact it could be due to a wide range of other explanations such as lower level key personnel changes, new equipment, or even regression toward the mean or it’s opposite. In a complex and stressful environment such as Iraq, leaders are especially vulnerable to the false cause fallacy. Soldiers are being wounded and killed; everyone wants to find a cause for the attacks in order to eliminate it. Critical thinkers will ensure that presented causes of bad events are, in fact, causally related to the bad result being explained.

*Appeal to Fear.* This involves an implicit or explicit threat of harm to advance your position. A fear appeal is effective because it psychologically impedes the listener from acknowledging a missing premise that, if acknowledged, would be seen to be false or at least questionable.<sup>31</sup> An example of this fallacy would be for a prosecutor at a Courts Martial to argue that the defendant needs to be convicted because if the person is not put in jail, the spouse of the juror might be the next victim. In reality, what the defendant might do in the future is irrelevant for determining his guilt at the Courts Martial. An example of this fallacy would be

for a company commander to argue to the brigade commander, “if we don’t detain and question every young male in the southeast corner of the town you can count on deadly IED attacks along the Main Supply Route each day.” In this case the company commander is distracting the brigade commander from the weak and questionable premise that every young male is planting IEDs by focusing attention on the fear of losing more soldiers to IEDs.

*Appeal to the Masses.* This fallacy focuses on an assertion that if something is good for everyone else, it must be good for me. Advertisements try to convince us that “everyone” is seeing a movie, trying a new taco, or wearing a new set of jeans; therefore, you should too. In a military context, we often hear a comment like, “Sir, all the other TRADOC posts have already gone to this system.” Unfortunately, popularity is not always a reliable indication of sensibility or value.<sup>32</sup>

*Slippery Slope.* The fallacy of slippery slope occurs when the conclusion of an argument rests upon an alleged chain reaction and there is not sufficient reason to conclude that the chain reaction will actually take place. As an example, during the early months after the “don’t ask, don’t tell” policy was established, it was not uncommon to hear military officers argue that acceptance of this policy should be resisted because acceptance would lead to gay military personnel getting married, having children, and taking housing away from traditional heterosexual couples on Post. In reality, there was no support for this conclusion. Similarly, many Americans argue against National Security Agency (NSA) listening of phone conversations placed from potential terrorists overseas to U.S. numbers by suggesting that allowing this monitoring will lead to the NSA listening to all phone calls of American Citizens which will eventually cause Americans to have private, personal phone calls made across town monitored by Uncle Sam. The alleged chain reaction in this case is clearly not supported and should not be used as a premise to convince the listener not to support NSA monitoring of potential terrorist’s phone calls to the U.S. from overseas.

*Weak Analogy.* Analogies are an effective way to communicate concepts, especially complex ones. An analogy occurs when one situation is put side-by-side to another, and a similarity is pointed out. Quite often these analogies are strong and are useful in illustrating a valid point. The fallacy of weak analogy is committed when the analogy used is not strong enough to support the conclusion that is being drawn.<sup>33</sup> As an example, several recent editorials posited that the United States should deal with the Iranian nuclear threat just like we dealt with the Cuban Missile Crisis (i.e., out of the box thinking as opposed to offensive military force or traditional diplomacy). In this case they are arguing that the Iranian nuclear issue is similar to the Cuban Missile Crisis and therefore warrants a similar response. One might argue

that although in both cases the U.S. was concerned about nuclear proliferation in a rival country, the dissimilarities are too vast (e.g., peer competitor sponsorship in the case of Cuba, impact of radical Islam in Iran) to argue that the techniques for dealing with Iran should replicate what we did with Cuba. Therefore, the conclusion that we should deal with Iran in 2006 much like we did with Cuba in 1962 appears to be an example of a weak analogy fallacy. As an additional example, there were many pundits in late 2003 that argued that U.S. forces in Iraq should mirror the British tendency to discard battle gear when dealing with Iraqis as the proper way to engage the population and create stronger community ties. Unfortunately, these pundits did not understand, or intentionally ignored, the fact that Shiite populations in Basra (where the British were operating) were significantly different, in terms of threat posed than were the Sunnis in the Sunni triangle (where U.S. forces were). They were guilty of a weak analogy fallacy.

*Red Herring.* The red herring fallacy is committed when the attention of a reader or listener is diverted with the insertion of some distracting information that is flashy, eye-catching and generally not relevant to the topic at hand. It is intended to divert the listener's attention.<sup>34</sup> In recent months it has not been uncommon for Army leaders to respond to questions about the lowering of standards for new enlistees and recruitment challenges by responding that current re-enlistment rates are higher than ever, especially for units returning from Iraq. They do not really address the issue of recruiting, but instead subtly change the focus of the conversation to retention. Similarly, anti-OIF interviewees often change the focus from whether democracy is good for Iraq or whether the U.S. forces have made life better for Iraqis by highlighting the number of the battle-amputees and combat deaths. In this case they are changing the focus from a discussion on the merits of U.S. policy by inserting an emotional issue guaranteed to distract and redirect the listener's attention.

Logical fallacies are very common and they are typically convincing. Recently, for example, in a TV documentary about alternate medicines, a U.S. Senator defended his Congressional bill to exclude vitamins and herbal medicines from USDA review by saying, "At least 100 million Americans use vitamins and other supplements every day and they can't all be wrong (appeal to masses); I know many Senators who also use these products (appeal to unqualified authority); this is just another case of the liberal left trying to intrude on the daily life of the average American (arguments against the person)." The average viewer probably thought these arguments made sense, but as critical thinkers, we need to assess arguments, especially important and relevant arguments, to identify fallacious reasoning. Bad judgments prompted by fallacious reasoning that draw upon invalid and questionable evidence are the enemy of critical thinkers.

In accord with the critical thinking model, as we EVALUATE THE INFORMATION presented we need to keep in mind our tendency to let biases influence our decision-making. Additionally, we need to be aware of the traditional types of fallacious reasoning that are often used, sometimes intentionally and sometimes out of ignorance, to try and convince us to support an argument.

The last component of the model is IMPLICATIONS. Critical thinkers need to understand the short-term consequences of accepting the inferences initially posited, of accepting any opposing perspectives, or of accepting the perspective developed through critical thinking. They obviously also have to appreciate the long-term consequences of the information they accept and the decisions they make. This includes the 2<sup>nd</sup> and 3<sup>rd</sup> order effects. Critical thinkers ask themselves, “what if my assumptions are incorrect? What if the variables I think are defined are actually uncertain or quite different from what I think? What things haven’t I considered that I need to consider.” Many of these questions will be ignored or minimized if the egocentric tendencies discussed earlier override sound judgment. As part of “implications” the critical thinker needs to analyze the impact of his decision on all relevant stakeholders. A stakeholder is a person, group, or unit that has a share or an interest in a particular activity or possible decision.<sup>35</sup>

Our Brigade Commander trying to reduce civilian deaths may come to a decision after going through the components of the critical thinking model that he needs to increase his Information Operations campaign through the local mosque and tell the populace that the increase in attacks is due to bad guys from out of the sector coming into the sector. Assuming he made this decision cognizant of his own viewpoint and assumptions, and that it was based on sound information and inferences, he now needs to consider the implications of this decision. What if the Imam at the mosque is not as trustworthy as he thinks? What if the populace knows that the attacks are actually coming from terrorists who live in the area, not outside operatives...will the Brigade Commander lose credibility? What if the populace starts to overwhelm his intelligence assets with reports of purported bad guys? Does he have the force structure to do something about it? Who are the stakeholders in this case? The Commander needs to assess his course of action along many lines, including the impact on his troops, adjacent units, local populace, Iraqi military and police forces, and higher headquarters. The bottom line is that a critical thinker will consider all these things, and many more possibilities, in a deliberate and conscious manner either within the boundaries of the military decision-making process or outside of it.

The preceding section is intended to provide a simple critical thinking model to facilitate the development of critical thinking skills. My intent is to provide a basic understanding of the concepts presented, but probably just as important, to also inculcate the terminology of critical thinking into daily military lexicon. Military leaders need to continuously ask themselves, "Is this something I need to think about critically? How are my point of view and egocentric tendencies affecting the way I look at this? What's the point of view of the person presenting the information? What are my assumptions? Are we making the correct inferences based on the data provided? Are there data we need to consider and can access? Is the information true, or at least plausible? Are the conclusions warranted by the evidence? Are biases and traps affecting our judgment? Have I considered all the implications? The more we can introduce these terms into Army culture, the better the prospect for increasing our critical thinking skills. The next section will assess the current state of critical thinking in the military.

### Critical Thinking in the Military

The Army clearly has some structural and cultural processes and norms that should facilitate critical thinking. The Military Decision Making Process (MDMP) is a rational, methodological approach for making decisions. Followed correctly, it should lead to the best (or at least better) decision given the degree of uncertainty and complexity of the situation. The real challenge is that each step of MDMP is accompanied by a wide range of opportunities for a failure in critical thinking with a consequent bad decision. From receiving the Commander's initial guidance, to generating Courses of Action; from evaluating Courses of Action to listing Assumptions, the reader can hopefully appreciate that biases, egocentric tendencies, poor inferences, and fallacious reasoning can lead the MDMP astray in very significant respects. If the Commander thinks his intuition is infallible and that that last way he dealt with a seemingly similar problem will work in this case, you can see how the availability heuristic, along with egocentric righteousness, might well lead the staff right down the wrong road. Lee's actions at Gettysburg, following on the heels of his success at Chancellorsville, might illustrate this point. At the end of the day a critical thinker will appreciate the value of MDMP, yet at the same time he or she will appreciate the potential impact of a lack of critical thinking on all steps of the process.

Besides MDMP, the military has other processes and norms that facilitate critical thinking. For one, the military is extremely diverse. Rich and poor, black and white, Jew, Christian, Muslim and non-believers all serve in the U.S. military. This diversity, by definition, can be a structural hindrance to obstacles to critical thinking as diversity helps to challenge bias,

egocentric myopia, and egocentric blindness. Of course, the success inherent in leveraging diverse viewpoints and opinions depends on the commander's ability to listen to them.

Unfortunately, the combination of our diversity and emphasis on MDMP, which should help the Army elicit strong critical thinkers, does not seem to overcome the wealth of challenges the Army faces as it attempts to become better at critical thinking. Our biggest obstacle lies in the hierarchical nature of the Army and its accompanying cultural norms. Reflective skepticism as a technique to improve judgment, and hence decisions, is very difficult to embrace if you are not comfortable disagreeing with your boss, or even the boss's boss. This becomes especially difficult if ranking senior leaders, because of continued accolades and promotions bestowed tend to represent the egocentric tendencies described earlier. Unfortunately, senior leaders who have failed to take the careful steps to ensure the information they receive from their subordinates is "ground truth" even if it disagrees with their view, seem to many to be more the rule than the exception (At this point, you should be nodding your head in agreement – be careful – you are somebody's boss's boss – How do you get the right information?).

Compounding this individual egocentric view, the U.S. Army, because of its preeminence among the world's land powers, has tended to develop an ethnocentric view that our way is the best way. The impact of this ethnocentric (in addition to egocentric) view of the world is that the Army often struggles with cultural awareness, which is based on some of the critical thinking faults described in this article. The intense focus of the Army recently to develop culture-savvy officers is a testament to this shortcoming and a first step toward meaningful change.

The hierarchical nature of the Army causes a secondary effect in terms of developing critical thinking skills through its resistance to dialogue as a form of interaction. Senge asserts, "There are two primary types of discourse: dialogue and discussion. Both are important to a team capable of continual generative learning, but their power lies in their synergy, which is not likely to be present when the distinctions between them are not appreciated."<sup>36</sup> In order for dialogue to occur, whether in a command and staff meeting in a troop unit or in staff group at the Captain's Career Course, several things need to occur. Most important among these is a requirement that participants must regard one another as colleagues; additionally, someone must serve as a facilitator who "holds the context" of dialogue.<sup>37</sup> Fastabend and Simpson posit, "Critical thinking is also an aspect of environment. To foster critical thinking, Army teams must at times leave rank at the door. 'Groupthink' is the antithesis of critical thinking and exists in organizations in which subordinates simply mimic the thinking of their superiors."<sup>38</sup> For the Army to develop its critical thinking capability, it needs to educate, train and select officers who are comfortable with putting their position power (i.e., rank) to the side in an effort to facilitate

better judgment through reflective skepticism. Jim Collins in *Good to Great* found that the leadership in the great companies was not only about vision, it was “equally about creating a climate where truth is heard and brutal facts confronted. There is a huge difference between the opportunity to “have your say” and the opportunity to be heard. The good-to-great leaders understood this distinction, creating a culture wherein people had a tremendous opportunity to be heard and, ultimately, for the truth to be heard.”<sup>39</sup> This requirement applies not only to unit leaders, but also, and probably more importantly, to facilitators/instructors in the TRADOC educational system.

Given these challenges and obstacles to an Army environment which highlights critical thinking, how do we make the Army better at critical thinking? First, we need to teach leaders the knowledge, skills, and terminology associated with critical thinking. It is an acquirable intellectual skill. As mentioned earlier, the best way to teach critical thinking skills to Army leaders is to provide context-dependent skill development. Within the Officer Education System in TRADOC, for instance, officers need to be exposed to the model components presented here; however, the real meat of critical thinking development will occur as TRADOC instructors and facilitators highlight critical thinking opportunities throughout the presentation of the vast array of topics covered in a TRADOC curriculum.

This recommendation, however, has several antecedents to success. First, TRADOC needs to develop in its instructors the requisite skills to enable critical thinking in a context-dependent environment. Most important among these is the ability to facilitate dialogue. TRADOC instructors need to understand when it is appropriate to offer direct presentation, when it is best to have a discussion, and most importantly, when to facilitate a context-dependent dialogue to develop critical thinking skills. Second, not only does TRADOC need to develop the facilitation skills of its instructors, it needs to assign instructors to TRADOC slots that have the background, intelligence, and requisite knowledge, skills and abilities to ensure success. This is not the first paper to argue that the quality of TRADOC instruction needs to be raised. The secondary effect, which is too often overlooked, of a strong TRADOC critical thinking climate is that the graduates will then report to troop units where they can model some of these behaviors when dialoguing about important topics. This position is consistent with Fastabend and Simpson who posit, “Army leaders must create an environment where critical thinking is the norm and reasoned debate replaces unspoken dissent. Critical thinking is a learned behavior that is underpinned by education. The Army education system, moreover, can be our most effective lever of cultural change. Many of our most important cultural shifts can trace their origins to the school house.”<sup>40</sup>

Admittedly, critical thinking skills will develop, to some degree, in the TRADOC school environment. But the majority of critical skill development that needs to occur in troop assignments will happen only as the culture of the Army migrates to one that places a high value on critical thinking skills in a contemporary operating environment where leaders must deal with extreme complexities, assorted ambiguities, and continuing uncertainties. Within the constraints of the Army Force Generation (ARFORGEN) model, it simply makes sense that during the first year of the cycle a new battalion commander and his subordinates would attend some facilitated critical thinking training that could then be modeled throughout future cycles by the battalion commander. If the Army really cares about critical thinking, we need to devote time and resources to its development.

### Conclusion

The development of critical thinking skills is imperative for a successful United States Army. A goal of this paper is to identify some of the concepts and terminology that can serve as a foundation for discussions about critical thinking. The benefits of critical thinking have been discussed. Some relevant issues currently facing the military would also benefit significantly from the application of critical thinking. First, as the Army tries to develop a culture of innovation across the force it needs to be emphasized that creative and out-of-the-box ideas are important and valuable, but only to the extent that critical thinking is applied to help identify viable creative solutions to real problems. Creative thinking involves a divergence of thought; critical thinking involves a convergence of thought to weed through the poor ideas in order to identify the good ones. Without critical thinking, creative thinking tends to be wasteful of time and energy.

Second, as mentioned earlier, the egocentric and ethnocentric tendencies of Army officers are a barrier to developing cultural awareness. As critical thinking skills develop so will the ability to empathize with other points of view, an important capability of a culturally-savvy officer. Finally, as Army leaders learn how to facilitate dialogue as a means to encourage critical thinking, a secondary effect will be an empowerment of subordinates to contribute to the military decision making process. Most studies on decision making show the benefit of collecting various points of view and perspectives to the overall quality of the final decision. In addition to decision quality, numerous studies show that empowered subordinates will also show higher job satisfaction and a desire to remain in the military.<sup>41</sup> The context for the Army is not getting simpler – the sophisticated understanding of the context must be matched with sophisticated decision making. The application of the Critical Thinking skills discussed in this Chapter will begin to move our leaders, and our Army, in that direction.

## Endnotes

- <sup>1</sup> Association of the United States Army, Torchbearer National Security Report (Arlington, Virginia: Institute of Land Warfare, Association of the United States Army, March 2005), 21.
- <sup>2</sup> BG David A. Fastabend and Mr. Robert H. Simpson, "Adapt or Die" The Imperative for a Culture of Innovation in the United States Army," Army Magazine, February 2004, 20.
- <sup>3</sup> Association of the United States Army, 21.
- <sup>4</sup> Susan C. Fischer and V. Alan Spiker, Critical Thinking Training for Army Officers: Volume One: A Model of Critical Thinking (Alexandria, Virginia: U.S. Army Research Institute for the Behavioral and Social Sciences, May 2004), 3.
- <sup>5</sup> Diane F. Halpern, Thought & Knowledge: An Introduction to Critical Thinking, 4<sup>th</sup> ed. (Mahway, NJ: Lawrence Erlbaum Associates, 2003), 6.
- <sup>6</sup> A good example of this perspective is presented in: Richard Paul and Linda Elder, Critical Thinking, Tools for Taking Charge of Your Learning and Your Life (Upper Saddle River, NJ: Prentice Hall, 2001),
- <sup>7</sup> Ibid, XX.
- <sup>8</sup> Ibid, 52.
- <sup>9</sup> For a good discussion on automatic versus controlled processing, see Robert G. Lord and Karen J. Maher, "Cognitive Theory in Industrial and Organizational Psychology," in *Handbook of Industrial and Organizational Psychology*, ed. Marvin D. Dunnette and Leaetta M. Hough, (Palo Alto: Consulting Psychologists Press, 1991).
- <sup>10</sup> Paul and Elder, 103.
- <sup>11</sup> Ibid, 98.
- <sup>12</sup> Bruce J. Avolio, *Leadership Development in Balance* (Mahway, NJ: Lawrence Erlbaum Associates, 2005), 77.
- <sup>13</sup> Paul and Elder, 214.
- <sup>14</sup> Ibid, 234.
- <sup>15</sup> Ibid 233.
- <sup>16</sup> Anne Thomson, *Critical Reasoning: A practical introduction*, 2<sup>nd</sup> ed (New York: Routledge, 2002), 44.
- <sup>17</sup> Ibid, 26.
- <sup>18</sup> Paul and Elder, 70.
- <sup>19</sup> Peter M. Senge, *The Fifth Discipline* (New York: Doubleday, 1990), 241.
- <sup>20</sup> Paul and Elder, 70.
- <sup>21</sup> Ibid, 102.
- <sup>22</sup> Simon, Herbert A. *Models of Man*. (New York: John Wiley and Sons, 1957).
- <sup>23</sup> Max H. Bazerman, *Judgment in Managerial Decision Making* (Hoboken, NJ: John Wiley & Sons, 2002), 6-7.

<sup>24</sup> Ibid, 6-7.

<sup>25</sup> Ibid, 27.

<sup>26</sup> Collins, Jim. *Good to Great, Why Some Companies Make the Leap and Others Don't*, (New York: HarperCollins Publishers Inc, 2001).

<sup>27</sup> Ibid, 35.

<sup>28</sup> Schick, Theodore, Jr., and Vaughn, Lewis. *How to Think About Weird Things – Critical Thinking for a New Age*, 3<sup>rd</sup> Ed. (New York, NY: McGraw Hill, 2002), 298.

<sup>29</sup> Halpern, 203.

<sup>30</sup> Schick and Vaughn, 298.

<sup>31</sup> Patrick Hurley, *Critical Thinking: Excerpts from Patrick Hurley, A Concise Introduction to Logic*, 8<sup>th</sup> ed. for Strategic Leadership U.S. Army War College (Belmont, CA: Wadsworth/Thomson Learning, 2004), 115.

<sup>32</sup> Schick and Vaughn, 302.

<sup>33</sup> Hurley, 139.

<sup>34</sup> Hurley, 125.

<sup>35</sup> Thomas L. Wheelen and J. David Hunger, *Strategic Management an Business Policy*, 3<sup>rd</sup> ed. (Reading, MA: Addison-Wesley Publishing Company, 1989), 89-90.

<sup>36</sup> Senge, 240.

<sup>37</sup> Ibid, 243.

<sup>38</sup> Fastabend and Simpson, 21.

<sup>39</sup> Collins, 74.

<sup>40</sup> Ibid, 21.

<sup>41</sup> Katherine I. Miller and Peter R. Monge, "Participation, Satisfaction, and Productivity: A Meta-analytic Review," in *Leaders & The Leadership Process*, 4<sup>th</sup> ed., ed. Jon L. Pierce and John W. Newstrom (Boston, McGraw-Hill 2006), 314.