IPB: Predicting an Unpredictable Enemy

Why we do it?

Why the S2 can't do it?

Why the staff should?

A Monograph

by

Major Michael Dane Acord

US Army, Infantry

School of Advanced Military Studies

United States Army Command and General Staff College

Fort Leavenworth, Kansas

AY 06-07

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. REPORT DATE *(DD-MM-YYYY)*	**2. REPORT TYPE**	**3. DATES COVERED** *(From - To)*
23-03-2007	AMSP Monograph	July 2006 – March 2007

4. TITLE AND SUBTITLE
IPB: Predicting an Unpredictable Enemy
Why we do it? Why the S2 can't do it? Why the staff should?

5a. CONTRACT NUMBER

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)
MAJOR Michael D. Acord

5d. PROJECT NUMBER

5e. TASK NUMBER

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
Advanced Military Studies Program
250 Gibbon Avenue
Fort Leavenworth, KS 66027-2134

8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)
Command and General Staff College
1 Reynolds Avenue
Fort Leavenworth, KS 66027

10. SPONSOR/MONITOR'S ACRONYM(S)
CGSC

11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION / AVAILABILITY STATEMENT
Approved for Public Release; Distribution is Unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

The purpose of this study is to determine why intelligence officers acting as battalion S-2 have difficulty predicting the enemy. It hypothesizes that two causes: lack of experience of the principal officers conducting IPB and inadequate emphasis on the staff's role in IPB have cascading effects that prevent staffs and commanders from mastering the planning process (which inevitable effects execution). The study explores several fundamental questions. First, why predict at all? It attempts to answer this question through a study of the neurology of prediction as it relates to action and thinking. Three major sources are used to support the study's findings. These include the studies of Jeff Hawkins, the founder of Palm Pilot and a student of neuroscience from his book *On Intelligence*; Richard Heuer, a social psychologist that works for the CIA from his work *The Psychology of Intelligence Analysis*; and Abraham Maslow, the renowned psychologist from his work *A Theory of Human Motivation*. Second, the study researches why the military is so connected to action. This is accomplished through a survey of the Army's Doctrine both past and present. Next the study answers why some predict better than others. The study shows how our current manning methodology for S-2s at the battalion and brigade level is flawed.

15. SUBJECT TERMS
IPB, Intelligence, Prediction, MDMP, Neurology, Psychology

16. SECURITY CLASSIFICATION OF:			**17. LIMITATION OF ABSTRACT**	**18. NUMBER OF PAGES**	**19a. NAME OF RESPONSIBLE PERSON**
					Kevin C.M. Benson, COL, US Army
a. REPORT	**b. ABSTRACT**	**c. THIS PAGE**	UNLIMITED	47	**19b. TELEPHONE NUMBER** *(include area code)*
UNCLASS	UNCLASS	UNCLASS			913-758-3302

SCHOOL OF ADVANCED MILITARY STUDIES

MONOGRAPH APPROVAL

MAJ Michael Dane Acord

Title of Monograph: **IPB: Predicting an unpredictable enemy. Why we do it? Why the S2 can't do it? Why the staff should?**

Approved by:

_____ Monograph Director
James J. Schneider, Ph. D

_____ Director,
Kevin C.M. Benson, COL, AR School of Advanced Military Studies

_____ Director,
Robert F. Baumann, Ph.D. Graduate Degree Programs

Abstract

IPB: Predicting an unpredictable enemy. Why we do it? Why the S2 can't do it? Why the staff should? by Major Michael Dane Acord, US Army, Infantry, 52 pages.

The purpose of this study is to determine why intelligence officers acting as battalion S-2 have difficulty predicting the enemy. It hypothesizes that two causes: lack of experience of the principal officers conducting IPB and inadequate emphasis on the staff's role in IPB have cascading effects that prevent staffs and commanders from mastering the planning process (which inevitable effects execution).

The study explores several fundamental questions. First, why predict at all? It attempts to answer this question through a study of the neurology of prediction as it relates to action and thinking. Three major sources are used to support the study's findings. These include the studies of Jeff Hawkins, the founder of Palm Pilot and a student of neuroscience from his book *On Intelligence*; Richard Heuer, a social psychologist that works for the CIA from his work *The Psychology of Intelligence Analysis*; and Abraham Maslow, the renowned psychologist from his work *A Theory of Human Motivation*. Second, the study researches why the military is so connected to action. This is accomplished through a survey of the Army's Doctrine both past and present. Here the study links the requirement for visualization with the Army's action based psyche. Next the study answers why some predict better than others. The study shows how our current manning methodology for S-2s at the battalion and brigade level is flawed.

This study concludes that prediction because it involves representing *future* actions mentally in one's mind, occurs both unconsciously and consciously. It is an automatic process that is fundamental to how humans perceive their environment. The mental representation of motor processes, as Hawkins describes it, drives action. The action typically occurs to fulfill some need. Maslow contends to satisfy needs, one must move from current conditions to future conditions; ergo one must act. In order to act, one must "think" about doing it in the sense that one must visualize the action before it occurs. Prediction is necessary for all action from breathing to food gathering. Higher complex actions such as problem solving follow similar neurological and psychological lines. Along psychological lines, one solves problems because of higher growth needs. With respect to neurology, perceptive inputs to the cortex are similar to sensory inputs, in the sense that they are received and processed the same. Military decision making requires individuals to visualize a *future* condition. These conditions include the enemy and terrain as a part of the condition. IPB is the process that assists the staff and commander determine said conditions. IPB results partly in predictions about the *future* state of the enemy. Right or not, these conditions are necessary to provide the impetus to action. Since the Army is largely action based, the predictions resulting from IPB provide the basis for operations. Prediction is as necessary as it is inevitable.

TABLE OF CONTENTS

INTRODUCTION

On December 7, 1941, Japanese planes attacked Pearl Harbor in a pre-emptive attack that essentially destroyed the US Fleet anchored there. On July 25, 1950, the North Korean Army attacked across the 38th Parallel and nearly defeated Korean and US Forces on the Peninsula. On January 30, 1969, the People's Army of Vietnam and Vietcong attacked over 58 major cities across Vietnam which resulted in one of the largest surprise attacks ever. On August 2, 1990, the Iraqi Army seized Kuwait in a bold move to settle an old land dispute. On September 11, 2001, Al Qaeda operatives seized control of four commercial jetliners and crashed them into buildings in New York and Washington to punish "the Great Satan" for occupation of the Islamic holy lands. In March and April of 2003, during Operation Iraqi Freedom, Fedayeen Fighters loyal to Saddam Hussein, attacked V Corps combat units and lines of communication in an unprecedented manner resulting in redistribution of combat assets for protection. These historical examples have a common denominator. Strategic intelligence analysis failed to predict what the enemy was going to do or failed to communicate the results of their analysis to decision makers. These "intelligence failures" have littered the short history of the US military. Since the births of the nation's intelligence services and military intelligence corps, one consistency has occurred, failed predictions.

At the tactical level of war, one sees a similar phenomenon. Although similar to strategic predictions about the behavior of a system, at the tactical level, predictions typically refer to anticipated enemy actions. During the Military Decision Making Process (MDMP), intelligence officers are charged with determining the intentions of the enemy. These predictions take the form of enemy options or enemy courses of action (ECOAs). Procedurally, this process is called Intelligence Preparation of the Battlefield or IPB. It results partly in a prediction as to the future actions of the enemy.

The Center for Army Lessons Learned (CALL) has observed that these predictions lack a certain dimension of quality. They compile trends from each training center to identify deficiencies in Army units. They produce a quarterly bulletin (called *Trends*) that compiles the prevalent positive and negative trends during any given quarter. To be a trend, it must be identified by trained observers across more than one unit and effect the performance of the unit, either positively or negatively. A study of Combat Training Center (CTC) trends over the past five years consistently shows deficiencies in prediction. For example, at the Joint Readiness Training Center (JRTC) in Louisiana in the 03-10 volume of *Trends* observer-controllers or O/Cs made the following observation:

> Analysis of ECOAs is often not thoroughly conducted, particularly during low-intensity conflict (LIC) and military operations on urban terrain (MOUT) phases of a rotation[1]

The discussion regarding this observation refers to ECOAs as "shallow." It cites deficiencies including lack of detail, failure to consider enemy combined arms, and discussing only one-dimensional threats.[2] In a similar observation by observers at the National Training Center (NTC) in the Mojave Desert in California, in the 05-9 volume of T*rends* O/Cs states that "battalion staffs do not develop detailed multiple threat courses of action."[3] Discussion on this trend follows the same logic. The journal posits that S-2s develop ECOAs "without input from other BOS experts" and "typically present only one of these."[4] Therefore, one can argue that S-2s, at least at the battalion and brigade levels (the focus of the CTCs) have difficulty making

[1] Department of the Army, Center for Army Lessons Learned. 2001. JRTC Trends. *CTC Trends* JRTC Leader's Training Program, no. 03-10
[2] Ibid.
[3] Department of the Army, Center for Army Lessons Learned. 2003. NTC Trends. *CTC Trends* 3rd & 4th Qtr FY03, no. 05-09.
[4] Department of the Army, Center for Army Lessons Learned. 2003. NTC Trends. *CTC Trends* 3rd & 4th Qtr FY03, no. 05-09.

predictions about the enemy that provide the staff with the information necessary to conduct subsequent planning. These examples, as well as others, span five years of observations.

Trends also observed the effects of underdeveloped ECOAs or low quality prediction on subsequent steps of the planning process.[5] The 03-10 volume observed that the lack of enemy COA analysis resulted in "an incomplete wargame." Also, the lack of detail resulted in "unsynchronized reconnaissance and surveillance plan."[6] The 05-09 volume of *Trends* observed that units where predictions were underdeveloped also had commanders and staffs that were unable to "plan for the flexibility required to defeat all ECOAs."[7] Therefore, without a lot of scientific rigor, one could conclude that inadequate prediction during IPB has a negative effect on subsequent planning. The observations and discussions in *Trends* provide evidence that supports the prediction-planning correlation. The question remains, if we know this, how after more than tens years of IPB has the Army not reversed the negative trend of inadequate prediction? More importantly, why can't our intelligence officers provide quality predictions? Since intelligence "experts" have seemingly made more wrong predictions than accurate ones throughout their history, one would ask, if prediction is so difficult, then, why predict?

This study seeks to answer some fundamental questions of prediction. What is the problem with S-2's and IPB? Why predict at all? What is the value of prediction? What does prediction provide to problem solving and the MDMP? Why are some people better at predictions than other? How can one overcome deficiencies in prediction? What quality in prediction is needed to support planning and execution? Why have S-2s failed to provide

[5] Although it is observed that what *Trends* refers to as a negative observation in ECOA development equates to a low quality trend. This assumption is necessary for the continuity of the paper's research. It is possible to have an accurate, but underdeveloped prediction or ECOA, but the results are the same. In both cases Friendly planning is negatively affected.
[6] Department of the Army, Center for Army Lessons Learned. 2001. JRTC Trends. *CTC Trends* JRTC Leader's Training Program, no. 03-10
[7] Department of the Army, Center for Army Lessons Learned. 2003. NTC Trends. *CTC Trends* 3rd & 4th Qtr FY03, no. 05-09.

adequate predictions on the enemy options to support subsequent military planning and execution?

The study hypothesizes that two causes: lack of experience of the principal officers conducting IPB and inadequate emphasis on the staff's role in IPB have cascading effects that prevent staffs and commanders from mastering the planning process (which inevitable effects execution). Although the study refers to IPB in its complete sense, and should benefit the staff, it principally focuses on the concept of prediction in IPB.

The study consists of four sections. In the first section, the study investigates why man predicts. It includes a study of the neurology of prediction as well as the psychology of action as it relates to prediction. The study seeks to show the nature of prediction as it pertains to brain activity as well as the psychological drives that lead to action. Second, the study discusses the Army's affair with action. This part seeks to describe how action is fundamental to the Army's psyche. It also seeks to link the need for action with the impulses of prediction. The third section discusses prediction and its role in the Military Decision Making Process. This section seeks to connect the higher cognitive event of prediction as it relations to military doctrine, battle command, and the decision making process. The fourth section discusses prediction capability. It seeks to define why some are better at prediction than others. The conclusion seeks to restate concisely the findings of the study as well as identify the implications involved in failure in IPB and make recommendations to overcome the challenges. Recommendations, where applicable, follow DOTLMPF as well as consider ease of implementation and costs. Unless otherwise stated, masculine pronouns do not necessarily refer to men.

Why Predict?

Before embarking on a biology lesson, it is useful to explore the opposing views of prediction. Why predict? It seems like a reasonable question. One could argue that the current complex environment prevents predictions; the situation changes so rapidly that prediction

provides no useful fruit. Also, that information and data in today's contemporary operating environment is so "incomplete, ambiguous, and contradictory" that any inference about the future would be a waste of time.[8] In fact, some have even deemed the current adversaries, Al Qaeda and the Taliban, as "unpredictable." As a result, there is a growing community of leaders that believe prediction should be removed from our doctrine. This is not just a recent fight.

Two post World War One authors wrote views discussing the place of determining enemy intentions in combat intelligence. The first author, Lieutenant Colonel Walter C. Sweeny in his 1924 book *Military Intelligence: A New Weapon in War* argues the need for determining the enemy's intentions when developing friendly courses of action. Sweeney, serving both in the Military Intelligence Division under General Pershing, and as the Chief of Staff of the 28th Division, was uniquely qualified to discuss the employment of what he deems as a "new weapon in war." Sweeney argues that the tactical problem of every commander consists of "three elements: (1) his mission; (2) the strength, situation, plans and intentions of the enemy; (3) and the strength, state of readiness, situation, etc. of his own forces." Sweeney believes that the elements are interrelated and "correct estimate of each….is equally vital with the other two to solve the problem."[9] This concept was a precursor to the modern considerations of METT-T used during the Commander's visualization. His word choice, however, would prove to be antagonistic.

A second Post World War author, Major Edwin E. Schwien, in his book *Combat Intelligence: Its Acquisition and Transmission* devoted considerable effort to refuting Sweeney's claims. Schwien, an instructor at the Command and General Staff School from 1932 to 1936, was also qualified to comment on the role of intelligence in combat. Schwien contends that it is

---

[8] Richard J. Heuer, Jr. 1999. Psychology of Intelligence Analysis. Washington, DC: Central Intelligence Agency. 35

[9] Walter C. Sweeney. 1924. *Military Intelligence: A New Weapon in War*. New York: Frederick A. Stokes Company. 28

"nonsense" to "judge what one sees, and to divine what one does not see."[10] He contends that determining the "most probable enemy mission" leads to "complete surprise" and warns against it. He describes capabilities as the essential information that should be sought by intelligence assets. He believes that understanding of capabilities illuminates the possible lines of action available to the friendly force.

In a sense, both are in agreement. In fact, careful study shows that both individuals seem to be victim of syntax. Schwien agrees that it is possible to determine future capabilities. However, he caveats by saying that it would require gathering large amount of information to do so.[11] His "lines of action" and capabilities seem synonymous with today's syntax of possible enemy options. Sweeney's "intentions" seems to be synonymous to the current syntax of enemy aims and objectives. However, he also warns that the "shadows cast by past events, are still just shadows." [12] Both authors offer keen historical insight in the intelligence process and prediction's role.

Recently, MAJ Lawrence T. Brown in his 2004 monograph revived this argument when he contends that a "major deficiency lies in Step 3, Determine Threat Courses of Action." Brown argues that IPB in its original form has "outlived its usefulness." His main thesis is that humans cannot predict the future, and should therefore, focus on enemy capabilities. To support this he cites BG Koch, Patton's G2 during WWII. Koch stated "for intelligence purposes, one thing counts: Capabilities." Koch went on to advise that "Intelligence errors in combat, if serious, were measured in terms of lives lost. If they led to wrong tactical decisions, intelligent officer was readily available to reassignment." Brown also cites BG Richard Quirk, the G2 of the 24th Infantry Division during Operation Desert Storm. Quirk felt similarly. Quirk added, "It was

---

[10] Edwin E. Schwien. 1936. Combat Intelligence: Its Acquisition and Transmission. Washington DC: The Infantry Journal, Inc. 13

[11] Ibid. 9

[12] Walter C. Sweeney. 1924. *Military Intelligence: A New Weapon in War*. New York: Frederick A. Stokes Company. 171

unnecessary and dangerous to base combat decisions on such predictions."[13] This argument continues to the present day. However, escaping "predicting" has not been easy. Inference to prediction litters world history.

Throughout history, many have been consumed with prediction. Sun Tsu represented some of militaries earliest theories. Writing over 2000 years ago, Sun Tsu inferred prediction in his famous statement "know the enemy and know yourself; and in a hundred battles you will never be in peril." Although not specifically referring to prediction, it is clear that in order to "never be in peril" one must not only "know the enemy" capabilities, but also one must "know" where and when the enemy intends to use them.[14] Napoleon recognized the importance of predictions. In a callout in FM 34-130, Napoleon states that "If I always appear prepared, it is because before entering on an undertaking, I have meditated long and foreseen what may occur."[15] To foresee what may occur must involve the possible future states of his enemies. No doubt, Napoleon was predicting the intentions of his enemies. Clausewitz also could not easily escape it. While discussing uncertainty, Clausewitz refers to war as a location for "sensitive and discriminating judgment" with "skilled intelligence to 'scent out' the truth." Once again, Clausewitz infers prediction capability by identifying ones ability to "scent" it out "the truth."[16] This "truth" arguably is the enemy's future intentions. Finally, Martin Van Creveld, a well known military historian, summed up how enemy intentions has remained on the minds of military commanders

[13]Lawrence T. Brown. 2004. The enemy we were fighting was not what we had predicted." what is wrong with IPB at the dawn of the 21st century?. To understand Brown's argument, one must understand that he believes that prediction equals intentions. Original reference: Koch, Oscar W. *G2: Intelligence for Patton*, 43 and Quirk, Richard J., "Intelligence for the Division: A G2 Perspective". 4

[14] Sun Tzu, *The Art of War*, ed. Samuel B Griffith, London: Oxford University Press, 1983, 81-84.

[15] Department of the Army. 1994. *FM 34-130 Intelligence Preparation of the Battlefield.* Washington, DC: Government Printing Office. 1-1.

[16] Carl von Clausewitz. *On War*. Princeton University, NJ, 1976. Edited and translated by Michael Howard and Peter Paret.

> From Plato to NATO, the history of command in war consists essentially of an endless quest for certainty – certainty about the state and intentions of the enemy forces[17]

This quest for certainty refers to future states. Prediction is the means for coping with this uncertainty. Despite its pitfalls, historical analysis shows that it has been a part of military command since the beginning.

Prediction is not necessarily limited to the military. Much of the economic system of the United States is based on prediction. For example, much of the trading that occurs daily in our stock markets deal in futures or predictions. This is why stock prices rise and fall when the facts, or quarterly earning" reports are published. Money is made by individuals that can 'scent out' which companies will improve the financial standing and stock price, and which will not. Daily business shows such as "The Cost of Freedom" on Fox and "Moneyline" on CNN spend their time making predictions every day. The price of gas is determined partly by predictions in the supply and demand as well as the environment where the oil is welled. Forecasting, similar to prediction, plays a major role in determining the paths of severe weather. Each day, millions "predict" the weather and make clothing and umbrella decisions based on said predictions. Doctors use prediction daily when they advise us to "eat healthy," or "lose weight." Man's lust for prediction seems insatiable. And despite being wrong more times than the local weatherman, man continues to predict. He cannot help it. Prediction occurs automatically and unconsciously.

Jeff Hawkins, the founder of Palm Pilot, a popular hand-held organizer, studied the automatic and unconscious nature of prediction. Hawkins, a computer programmer and designer became interested in brain activity while studying artificial intelligence. Although not a neuroscientist by trade, his book, *On Intelligence*, confirms his depth and breadth of knowledge in the field. In an effort to understand the difference between computers and brain activity,

[17] Martin Van Creveld. 1998. *Command in War*. Cambridge, MA: Harvard University Press. 246

Hawkins undertook an extensive study of the human brain. His ultimate goal was to determine the possibility and feasibility of artificial intelligence in computer systems. His studies led him to propose his own theory of human intelligence called the "Memory-Prediction Framework." Hawkins' theory is largely based on studies of Vernon Mountcastle, a renowned neurologist from John Hopkins University as well as the work of others. The weakness of Hawkins' work is its lack of scientific rigor. This is understandable. Brain study is invasive and dangerous. Many brain studies are performed on patients with brain lesions. Unfortunately (or fortunately), many of those individuals are not solving complex problems on a day to day basis. This limits study to motor sensory because motor sensory study is practical and safe. As a result, the field lacks data in the area of complex problem solving. The strength of Hawkins' work lies in its scope. Most neuroscientists focus on a specific aspect of brain activity. Hawkins posits an overall theory that involves both motor-sensory and complex prediction and problem solving[18]. He writes in an easy to understand manner and surprisingly provides insights into why we predict and why some are better than others.

To understand Hawkins' contribution to prediction theory, an overview is necessary. The memory-prediction framework theory of brain activity proposes that "bottom-up inputs" or inputs from the senses are "matched" with patterns stored in the cortex to produce a "top-down expectation." These expectations (how the brain interprets what it thinks it sees, hears, feels or smells) interact with the bottom-up signals (inputs from the senses) to generate predictions of what it perceives. Hawkins goes on to say that "frequently observed temporal sequences" are "named" in the cortex and when an "input sequence matches a memorized sequence," it produces a process that results in a prediction. He accounts for patterns that are not exactly alike by a concept he refers to as invariance. Where there are no pre-stored patterns, Hawkins contends that

[18] Jeff Hawkins and Sandra Blakeslee. 2004. *On Intelligence.* New York: Times Books: Henry Holt and Company. Understanding his own limitations, Hawkins challenges anyone to disprove his theories solely to advance knowledge in this area.

the bottom-up inputs are forwarded to "higher levels of hierarchy" until the closest match is perceived. [19] Although these predictions are not complex predictions as in an IPB or military sense, Hawkins' believes they relate closely to the neural activity executed in higher decision making.

Hawkins argues that the cortex function of prediction is unconscious and automatic. He believes that we are constantly "completing patterns." He states that your "neocortex is a complex biological auto-associative memory." The concept of auto-association refers to the process by which the brain seeks familiar patterns. These patterns are stored in the neocortex. They are the result of some previous experience that has been processed and stored as patterns or "sequences of sequences."[20] When the sensory apparatus sees, hears, smells, or touches something, the brain automatically seeks a similar pattern or sequence to predict what it is.

For example, Hawkins describes how the brain auto-associates in his example of a partial view of a familiar face blocked by a bush. He states that although, the one does not see the entire face our brains "fill in" what is missing and "predicts" what one does not see. This is logical. Consider a case of mistaken identity. Sometimes when we see a partial view that "looks" like someone we know, our brain mistakenly fills in the missing data and we predict the wrong identity. When we see the complete view, we will often have an embarrassing moment where we state, "I'm sorry, I thought you were someone else." This shows the unconscious and automatic nature of our brains. In another example Hawkins refers to the popular jingle "Twinkle, Twinkle, Little Star." Just by seeing the name, or reading these words, the brain fills in the remaining pieces "automatically." This same concept was the core of the popular show "Name that Tune" in which individuals competed to determine a song using the fewest notes as possible. Most have experienced auto-association. Anyone who has watched the popular TV game show "Wheel of

[19] Jeff Hawkins and Sandra Blakeslee. 2004. *On Intelligence.* New York: Times Books: Henry Holt and Company. Summarized from multiple parts of the book to provide an overview of the theory.

Fortune" has also experienced this phenomenon. Sometime during the show, one has an "a-ha" moment and knows the answer before Vanna has turned all the letters. Hawkins would contend that your cortex has found a similar pattern which resulted in your ability to "solve" the puzzle.[21] In SAMS, when a student encounters a reading assignment that he read during CGSC or in prior study, he might not remember the specifics at first. However, when presented with key bits of information as a part of the discussion, or if he asks he friend for some highlights, the themes of the assignment seem to "rush back."

Hawkins insists that his theory of memory prediction framework is not "limited to low-level sensory information."[22] Hawkins believes that more complex problem solving and decision making follows the same neural processes. To understand the connection to more complex predictions, one must first understand how the brain perceives it environment. Vernon Mountcastle, most known for his discovery of the columnar organization of the cortex, posits a theory that the "inputs to the cortex are all basically alike."[23] Mountcastle contends that the inputs follow an algorithm that is similar for all the sensory inputs. Seeing, hearing, smelling, and touching, although received differently from their environment, are encoded into this algorithm. This means that there is no "fundamental difference between the types of information."[24] The information is encoded into a format that is not source specific then perceived by the brain based on the coded information or algorithm. Hawkins supports Mountcastle's claim by citing scientific tests performed where cameras where connected to sensors on blind individuals' tongues. The results showed that the brain "quickly learned" how to interpret the images.[25] Similar studies on ferrets where a surgical procedure switched audio and

---

[20] Jeff Hawkins and Sandra Blakeslee. 2004. *On Intelligence.* New York: Times Books: Henry Holt and Company. 129
[21] Ibid. 74
[22] Ibid. 96
[23] Ibid. 55
[24] Ibid. 56
[25] Ibid. 61

visual neurons resulted in the brain "rewiring" itself to decipher the patterns as it did before.[26] Hawkins hypothesizes that Mountcastle's principle, if true of low level sensory predictions, must be true of all cortical areas. Hawkins concludes that "higher intelligence is not a different process than perceptual intelligence." [27] Therefore, one can infer that higher intelligence processes and perceptual intelligence processes will follow similar patterns. Others have experienced and written about similar thought processes that correlate to Hawkins' theory.

Other individuals in education, leadership, and philosophy support Hawkins' theory that more complex problem solving and decision making follows the same neural processes. One can infer the connections in their research, despite the lack of scientific rigor (with respect to neurology). John Dewey, and educator and philosopher, in his work *How We Think* supports Hawkins' higher level prediction theory. Starting with his simple example, one can see correlations. When Dewey observed a pole on the upper deck of a ferryboat, he instinctively sought to determine its purpose. He goes on to describe his process of thought and his predictions as to the purpose of the pole. [28] Although, Dewey's "pre-occupation" with the pole further supports Hawkins unconscious and automatic nature of prediction, it speaks to common neural processes as well.

In Dewey's description of the "complete act of thought," one finds the evidence as to how more complex problem solving and decision making follows the same neural processes. Dewey's steps include "1) a felt difficulty, 2) its location and definition, 3) suggestion of possible solution, 4) development by reasoning to the bearings of the suggestion, 5) further observation and experiment leading to its acceptance or rejection; that is, the conclusion of belief or disbelief."[29] In Dewey's ferryboat example, he is faced with "a felt difficulty." This is

---

[26] Jeff Hawkins and Sandra Blakeslee. 2004. *On Intelligence.* New York: Times Books: Henry Holt and Company.63
[27] Ibid. 96
[28] John Dewey. 1991. *How we think.* New York: Prometheus Books. 70
[29] Ibid. 72

synonymous with Hawkins' example of the face blocked by the bush. In both cases, the incomplete picture results in the mind automatically seeking to complete the picture. In the case of lower level sensory input, the brain attempts to predict the missing information. In the Ferryboat case, the missing information is an item's purpose. The "felt difficulty" highlights that something is "not present to the senses" and leads Dewey to further investigation. [30]

Dewey's second step, "location and definition" is his attempt to address the "difficulty." Although Hawkins and Dewey's work diverge some here, one must understand the context of Dewey's work. His studies were occurring at the turn of the century some 50 years before Mountcastle's studies. Hawkins contends that this is unconscious. He would posit that the cortex is searching for a named sequence to define what is seen. Dewey argues, at this point, one should "suspend judgment" before jumping to conclusions. Hawkins would argue that "suspension of judgment is counter to brain activity." In a way, both are correct. The act of suspending judgment allows for the cortex to seek and test more representations. Dewey pragmatically recommended "suspending judgment" because he knew by experience that thinking about something often leads to a quality solution. This indirectly supports Hawkins' theory.

Dewey's third step correlates best to Hawkins' theory. The "suggestion factor" shows the evidence as to how more complex problem solving and decision making follows the same neural processes. Dewey contends that "suggestion…involves going from what is present to what is absent."[31] Hawkins would argue that this is the sole function of the cortex. Until one is certain as to what is absent, he would only *predict* what is present. This prediction would take place by the cortex analyzing the information that is available and then predicting what is missing. Like Hawkins' face example, a partial image of the face is present. The remainder of the face is absent. The cortex fills in the missing information automatically resulting in a prediction of the

---

[30] John Dewey. 1991. *How we think.* New York: Prometheus Books. 75
[31] Ibid. 75

whole face. In Dewey's pole example, he does just that. Dewey's mind first matched the sensory input of the pole with like representations in his mind. As these representations arose, Dewey "predicted" the possible purpose of the pole. Dewey seemed "consumed" with finding the absent information. He tested and rejected or accepted each of his ideas or representations as to the pole's purpose. Although Dewey ended the example before he found out the "truth," one could argue that this would continue until he learned the purpose of the pole, or a higher need arose.

These same concepts manifest themselves in IPB and Decision Making. The partial image of a face example is similar to the mental activity that occurs when partial information is all that is available prior to a decision. Individuals will go to great length to determine or guess the rest of the information. The experience of the individual, his subordinates, and time available determines how long this decision paralysis occurs. This haunts every military commander. The "felt difficulty" experienced by Dewey on the ferryboat is the same phenomenon that occurs when the S-2 (or anyone) receives a mission, an enemy report, or looks at the map. He is not consumed with what is on the map, or even where, but why is it there? He did this not because some manual recommended it. They did this because it as the intuitive nature of the brain to pursue curiosity. Man's inner curiosity will drive him to determine why things are the way they are. Finally, because this process is automatic and unconscious, an individual will begin to predict and fill in what is absent automatically. Despite the nobleness of sticking to capabilities, S-2's as well as others cannot avoid prediction. The idea of "capabilities" as the sole focus of IPB goes counter to the function of the brain. Despite the probability of incorrect prediction, even if one attempted to suppress the urge to predict, the brain continues to predict in an insatiable search for the information that is absent. We predict because we have to. So we know *why* we predict, but what is predictions' connection to action?

How and Why We Act?

Before discussing predictions role in problem solving and MDMP, one must understand what drives action. What activity in the brain results causes action to occur? How are thoughts translated into action? Why does an individual act? In an interview with the former commander of the Military Intelligence Corps, BG James "Spider" Marks, this question arose. When asked why he thought prediction was necessary, he replied that "intelligence drives operations." The interviewer, cognizant that intelligence and the prediction aspects of IPB are somewhat different, asked how? BG Marks answered that "the ultimate role of prediction was to achieve knowledge." The interviewer, although familiar with the concepts of information, intelligence and situational understanding, was unfamiliar with the concept of "knowledge," as a part of the intelligence process. BG Marks explained that "data" is aggregated into "information." "Information becomes intelligence," when it is fused "within a red (not necessarily enemy) and blue construct." Still confused, the interviewer asked how prediction supports the achievement of knowledge. By itself, he stated, "data, information, intelligence and understanding provide no impetus for action. They are passive." "Prediction," he stated, links intelligence with what the commander is trying to achieve, and that results in knowledge."[32] This means that "predicting the enemy" or more importantly predicting how the enemy will impact the friendly objective is necessary to move from thoughts and ideas, to action. Although, officers are taught that intelligence drives maneuver, and FM 3-0 describes intelligence as "fundamental to all Army Operations," what is less understood is *how* prediction "drives" action. [33] Prediction and action are linked neurologically and psychologically.

Perception and memory provide a neurological process that moves thought to action. Hawkins contends that "motor behavior and sensory perception are highly interdependent." He further states that "perception and behavior are almost one and the same." His study reveals that

[32]BG James "Spider" Marks (ret.). 14 November 2006. Interview by MAJ Acord. CARL Library

certain cells in the cortex "seem" to have motor function because they also project (electrical activity) into the motor areas of the brain. Hawkins argues that motor movements like all perceptions are stored in the cortex and "must also be represented." This means that like other memories, motor movements have stored patterns. Hawkins concludes that one "generates movements necessary to carry out a particular action by thinking about doing it."[34] So in order to move, one must think about doing it. This is similar to visualization. Many leadership and motivational speakers posit that one must "visualize" where one wants to be. That is to see one's self a millionaire or in a successful condition. This not only is true for the Waterboy (e.g. visualize and attack) to generate the motivation to move, it is true for about everything we do. Hawkins cites a well know phenomenon to support his claim.

In the process of catching a ball, Hawkins argues that the action results from the cortex recalling a representation or memory of catching rather that calculating the location of the ball when it reaches you. Hawkins states that your brain has a "stored memory of the muscle commands required for catching a ball." When ball is thrown, the cortex automatically and unconsciously recalls the appropriate pattern (or memory) and sends the motor commands necessary to catch it. Necessary adjustments are made, but the movement of the arm is the result of activating stored patterns, not calculating the location of the ball. Therefore, one must have a mental image of the desired (future) condition to precipitate a motor function. For example, a child learning to catch, especially a very young child, will experience great difficulty. Over time as the child practices, he improves. Hawkins believes this is the result of the child's cortex storing patterns of "successful" catches. Hawkins rejects that individuals "calculate" the position of the ball. He states that if one "calculated" the position of the ball, then an individual that has

---

[33] Department of the Army. 2001. *FM 3-0 Operations.* Washington, DC: Government Printing Office. 5-16.
[34] Jeff Hawkins and Sandra Blakeslee. 2004. *On Intelligence.* New York: Times Books: Henry Holt and Company. 157

not practiced catching would be able to perform the function. However, one only has to watch a few baseball games to realize that some catch better than others.

Hawkins further supports this by describing the difficulty in developing robotics to perform the same function. He states that a robotic arm requires "hundreds of calculations" to do the function the brain does seemingly with ease. With every variation new calculations must occur. Simple differences in the environment result in massive adjustments for the robotic arm to function properly (e.g. catch the ball). He concludes that the brain must use a different function other than calculation, and that mechanism, Hawkins states are memories stored from years of repetitive practice. Therefore, practice does in fact make perfect. Dad was right!

Richard Heuer Jr., a well know social psychologist and the author of the CIA Study *Psychology of Intelligence Analysis* supports Hawkins' Theory of the brain function of prediction. Although his discussion follows a line of logic on the pitfalls of perception, he contends that ones perception "constructs reality rather than recording it." This means he believes that our brains perceive or visualize what occurs *before* it occurs. Although Heuer believes this perception function of the brain is the source of some difficulty, it is clear that he thinks along the lines of Hawkins; that it is the function of the brain (specifically the cortex)is to "pre-see" prior to the action. He goes on to say that our perceptions are "strongly influenced by past experience, education, and cultural values."[35] Hawkins would argue that this is just how the cortex functions. The three factors that influence perception are no more than stored patterns in the cortex being searched to find the closest match. We also see examples of Hawkins beliefs in everyday life.

Recalling stored patterns makes sense. Consider the following example. After, traveling to work daily, the brain stores a sequence of patterns based on those experiences. Subsequently, without even thinking, certain functions occur. For example, before leaving, most automatically

[35] Richard J. Heuer. 1999. Psychology of Intelligence Analysis. Washington, DC. Central Intelligence Agency

put on seat belts. When approaching the turns along the route, most automatically turn on the blinker. After stopping and exiting the vehicle, most automatically locks the doors (a source of anxiety). Pattern's in one's everyday lives lends evidence to Hawkins theory. When the pattern is disrupted, we see further supporting evidence. For example, today's work requires entering the office from a different entrance. This requires parking in a separate location. However, if not thinking on the upcoming activity, one becomes a "victim" of his stored patterns. For example, despite knowing that the entrance requires parking in another part of the lot, if not concentrating, one still might turn on his blinker to the typical lot or actually turn before realizing that he is going somewhere else. Another example has supported the locksmith industry for years. A common mistake when disrupted upon exiting one's vehicle might be locking one's keys in the car. All are results of disruptions in stored patterns.

We see a similar phenomenon during exercises and long deployments. MDMP at the beginning of a rotation to the National Training Center is tedious. Mission planning from the start of the exercise is characterized by long hours, concentration and tedious work. However, after just a few short weeks, staffs seem to improve in their ability to conduct MDMP. Two factors are present at the end that we not present at the beginning, a better understanding of each other and the commander, and a better understanding of the enemy and environment. This same phenomenon can be observed by units that remain deployed to the same location over extended periods of time. For example, many individuals returning from Iraq and Afghanistan contend that they no longer conducted MDMP after the first few months. This is arguable, but it is likely that they evolved to an abbreviated planning process along the lines of the previous example. In each case, as the unit became more familiar with each other, the enemy, and the environment (e.g. know yourself, know the terrain, and know the enemy), they became more adept at planning operations. Hawkins would contend that this is the same as catching a ball. The units are acquiring, naming, and storing successful patterns. Then in subsequent missions, they are recalling the patterns "seemingly effortlessly." This causes some units to believe that they no

longer need MDMP or IPB. What is actually happening is that the systemic processes necessary when learning are no longer necessary because they have (frequently recalled) stored patterns. However, an absence of a stored pattern, for example, brought about by moving locations in theater, might necessitate a return to the learning process.

In the absence of a stored pattern, Hawkins argues that concentration, a higher activity within the cortex, compensates. Consider playing catch with a small child. Without the stored patterns, the child compensates by intense concentration. Most have seen the efforts a baby or small child invests in even simple activity. Until the child has more mental representations, he must concentrate. Hawkins argues that only practice builds representations that are recalled when the cortex predicts the moment necessary to catch the ball.[36] Hawkins argues that when one is concentrating, he is using every available mental representation available to successfully perform the action. Until a representation "works," meaning until a match results in a successful action (like catching a ball), trial and error continues. Hawkins contends that this "trial and error" is more a process of perceive and test. If the action works, it is stored. As more successful actions are stored, one can concentrate less and less and the action becomes "seemingly" effortless. Like the work example, one must concentrate to create the mental representation to make the "correct turn." Without it, it is likely you will likely follow the same pattern, and cause your spouse to say "did you forget we were going to the other lot?"

In sum, individual's act because they perceive what comes next as the result of stored patterns. They perceive what comes next because it is the automatic function of the brain to do so. Regardless of the task, the brain automatically searches for a like pattern, predicts the required action, and then sends those functions to the motor part of the brain. This neurological activity produces the impetus for movement and action. One could conclude that all action is the result of prior thought, either unconscious or conscious. Because decision making follows similar

neural paths, prior thought and prediction or visualization is required to move from thought to action. Without experience, more concentration is necessary to overcome the absence of stored pattern. This period prior to storing successful patterns is marked with numerous failures like the hundreds of missed balls when learning how to catch. Like the child learning to catch, staffs will experience the same frustration and difficulty in helping the commander make decisions. Only through development of stored patterns will Johnny learn to catch and staffs learn to facilitate commanders. Although this answers "how" thought is translated into action, it doesn't answer the fundamental question, "Why does the child catch the ball? A. H. Maslow's Theory of Human Motivation seeks to answer this question.

Needs provides a psychological impetus that moves thought to action. Basic needs, although having existed for centuries, became a part of the psychological theory based on the studies of A. H. Maslow. In 1943, Maslow published "A Theory of Human Motivation" in Psychological Review. Maslow contends that "Man is a perpetually wanting animal." Maslow suggests that needs are arranged in a hierarchy (often as a triangle) based on the potency of the need. Maslow's needs include five levels in two groups. The first group called deficiency needs, coincide with physiological needs. The top level, referred to as growth needs coincide with psychological needs. Maslow suggests that "while *deficiency needs* must be met, *growth needs* are continually shaping behavior." In Maslow's construct, "higher needs in this hierarchy only come into focus once all the needs that are lower down in the pyramid are maintained or entirely satisfied."[37] Maslow describes only one need, the need to know and understand that man pursues "even at great costs to the individual's safety." Maslow contends that "the cognitive need to know and understand, as well as systemize the universe" guides behavior and action.[38] Man's growth needs also involve a drive to "solve the cosmic mysteries." Therefore, man has a strong

---

[36] Jeff Hawkins and Sandra Blakeslee. 2004. *On Intelligence.* New York: Times Books: Henry Holt and Company. 69

[37] Abraham Maslow. 1943. "A Theory of Human Motivation" *Psychological Review,* 50, 370-396.

need "to know, to be aware of reality, to get the facts, to satisfy curiosity, to see rather than to be blind."[39] The child is driven to catch the ball to fulfill some need. Unless the ball is made of food, it is likely catching the ball, or more importantly, the recognition from catching the ball fulfills a child's esteem needs. He is driven to catch the ball by a desire for attention, praise and appreciation. From the previous ferryboat example, Dewey is driven also by the need to know and understand. The "felt difficulty" of the mast, and future felt difficulty when the child no longer receives praise for catching the ball will produce a problem; a difference from their existing state to a desired state. This problem leads them to action, both physically and/or mentally.

Military staffs like all humans follow Maslow's principles. Although deficiency needs are important to the individual staff members, conflicts arise as the result of growth needs. Two needs, self esteem and self actualization provide the highest drive to motivate action on the military staff. With self esteem needs, fear of embarrassment serves to drive individuals to high performance in their jobs. However, this is a double-edged sword. When this performance is threatened, defensiveness can result. For example, as a result of experience, individuals on a staff might disagree about the intentions of the enemy. Many times, this occurs publicly causing the S-2 to become defensive and to "stick to his guns." As a result, his individual self esteem needs trump self actualization needs. This means that the more productive self actualization needs, such as to know and understand, are lost because his self esteem needs are not met. This has numerous disastrous results that are discussed in Implications and Recommendations.

Thus, prediction in the sense of visualizing the action (either consciously or unconsciously) drives action, neurologically. Needs drives action, physiologically and psychologically. Since one *must* act to satisfy needs, one *must* move from current conditions to future conditions. That is one *must* act to get to a desired condition to meet needs. In order to

---

[38] Abraham Maslow. 1943. "A Theory of Human Motivation" *Psychological Review*, 50, 370-396.

act, one *must* predict in the sense that one must visualize the action before it occurs. Therefore, prediction is necessary for all action. Since simple action and complex action are processed similarly by the brain, all action follows the same principles; unconscious, automatic, and necessary. But this still doesn't answer the question "why predict in planning?" Despite being automatic and unconscious, how does this notion of prediction relate to MDMP? Before answering this question, one must understand the bedrock of the military's action based doctrines.

Action and the Military

The military's relationship with action is described in our capstone manual FM 3-0. The Army principal role is to fight and win out nation's wars and achieve directed national objectives."[40] "Fight and win" and "achieve directed national objectives" both describe a desired *future* action, winning and achieving. To achieve this future state, action is typically required. The Army's fundamental doctrines are inextricably linked to action. The "Principles of War" include three that entail action; objective, offensive, and maneuver. The Principle Objective means to "direct every military operation toward a clearly defined, decisive, and attainable objective." The description goes on to state that commanders should "have a clear understanding of the desired outcome." Clausewitz, in a call out quote box, connects this to the topic by stating that "no one should start a war without first being clear in his mind what he intends to achieve by that war." [41] To attain a "desired outcome," one must clearly visualize a *future* state. Offensive, as described by FM 3-0, is defined as "to seize, retain, and exploit the initiative." It goes on to state that "offensive action is the key to achieving decisive results."[42] The "decisive results" further describes this *future* state that leads to a desired outcome. The publication also contends that "action" is the key to attaining it. The Tenets of Operations builds on the Principles of War and further describes the Army's love affair with action. Initiative, one of these "tenants"

---

[39] Abraham Maslow. 1943. "A Theory of Human Motivation" *Psychological Review*, 50, 370-396.
[40] Department of the Army. 2001. *FM 3-0 Operations.* Washington, DC: Government Printing Office. 1-2.
[41] Department of the Army. 2001. *FM 3-0 Operations.* Washington, DC: Government Printing Office. 4-12.

involves acting before our enemies can act. FM 3-0 defines initiative as "setting or dictating the terms of battle." It further refers initiative to "offensive spirit," and "compelling the enemy to conform." In order to compel the enemy to conform, FM 3-0 states that Army leaders must anticipate events" to "set the terms of the battle" and "reduce the number of enemy options." Acting before our enemies can act is fundamental to success across the range of military operations.[43] Therefore, action is fundamental to Army operations. Actions that "impose the will of the commander" are the bedrock of how the Army fights and wins the nation's wars. This action, even at the macro level, follows the same neural processes. Therefore, they require the same visualization in order to be achieved. Without this visualization, the future states, as described by Army doctrine are virtually unattainable. This visualization is not possible without some level of prediction. This is where prediction and MDMP meet.

Prediction's Role in MDMP

The Commander's Visualization identifies part of prediction's role in the MDMP. It is "a mental process of achieving a clear understanding of the force's current state with relation to the enemy and environment, and developing the desired endstate that represents mission accomplishment and the key tasks that move the force from its current state to endstate." This "desired outcome" as described above manifests itself in planning and execution as the Commander's Intent. The Commander's Intent is "a clear, concise, statement of what the force must do and the conditions the force must meet to succeed with respect to the enemy, terrain, and the desired endstate. These are not autonomous components. The three are interconnected. The endstate is normally articulated "by the relationship between friendly forces and the enemy, terrain, and population." [44] Being, one man charged with this responsibility is overwhelming.

---

[42] Department of the Army. 2001. *FM 3-0 Operations.* Washington, DC: Government Printing Office. 4-13.
[43] Department of the Army. 2001. *FM 3-0 Operations.* Washington, DC: Government Printing Office. 4-15.
[44] Department of the Army. 2005. *FM 5-0 Army Planning and Orders Production.* Washington, DC: Government Printing Office. 3-4.

The staff's stated responsibility is "to assist the commander" achieve the desired result.[45] The staff supports the commander through staff estimates. Staff estimates are "assessments of the situation and analysis of those courses of action a commander is considering that best accomplishes the mission." Staff estimates are the written version of a staff members assessment based on his particular functional area. Their purpose is "to help the commander make decisions."[46] Together, the commander and staff act to achieve the desired objective, endstate or aim. The process the Army uses to do this is called planning. "Planning is the means by which a commander envisions a desired outcome, lays out effective ways of achieving it, and communicates to his subordinates his vision, intent, and decisions, focusing on the results he wants to achieve."[47] "The measure of a good plan…is whether it facilitates effective action in the face of unforeseen events."[48] IPB is the process that the staff uses to help the commander visualize the enemy and terrain.

FM 2-0 describes Intelligence Preparation of the Battlefield (IPB) as a "systematic process of analyzing and visualizing the threat and battlespace in a specific geographic area for a specific mission or in anticipation of a specific mission." The procedure is difficult. Part of effective IPB as defined by FM 2-0 includes "anticipating future enemy actions, capabilities, and situations." This produces two challenges. First, these actions occur *in the future*. This area has already been discussed. Second, anticipating requires reading the mind of the antagonist. This presents more than most people can handle. Not only do S-2's have to predict the future and the weather, they have to read minds as well! Sounds like too tall an order, and it would be a safe to bet against accuracy, but is accuracy that important? Army doctrine requires predicting future enemy actions, but how important is being right. Is being right a necessary condition? What do

[45] Department of the Army. 2005. *FM 5-0 Army Planning and Orders Production.* Washington, DC: Government Printing Office. 1-9.
[46] Department of the Army. 2005. *FM 5-0 Army Planning and Orders Production.* Washington, DC: Government Printing Office. 3-10.
[47] Department of the Army. 2001. *FM 3-0 Operations.* Washington, DC: Government Printing Office. 6-3.

accurate predictions provide? A closer look at IPB's purpose, both historical and current, provides some answers.

Historical descriptions of IPB clearly articulate its purpose. MAJ Colin Agee in a SAMS monograph in 1992 highlights some purposes of IPB throughout the doctrine at the time. He cites a passage from FM 71-2 where "IPB helps the task force commander and staff develop courses of action in a manner most likely to produce success and maintain flexibility." Additionally, it describes IPB as "the primary factor that will allow the battalion to react quicker than the enemy." [49] FM 34-130 at the time describes "IPB as a tool for assisting the command in accomplishing their missions."[50] No where does it suggest absolute certainty or accuracy. It describes processes that, in addition to other factors, assist the commander accomplish friendly missions. IPB was designed to help commanders and staffs develop future plans with increased chances of success. Since reacting "quicker than the enemy" is a timeless principle or characteristic, then some idea of the enemy's intentions are necessary to create the conditions to act faster. "Being right" helps only in providing a commander with better information to produce success, but since this is so difficult, being close will have to do.

Current doctrinal purposes of IPB also help to understand its relation to action and military operations. FM 34-130 states that the purpose of IPB is to help the commander and staffs "gain the information necessary to selectively apply and maximize combat power at critical points in time and space." It is designed "to support decision making."[51] FM 34-130 further states the IPB forms the "basis for defining the COAs available for the friendly command."[52] This means that IPB functions provide the information necessary help the staff develop COAs and execute military operations. As demonstrated before, predicting the future is difficult. It is

---

[48] Department of the Army. 2001. *FM 3-0 Operations.* Washington, DC: Government Printing Office. 6-2
[49]Colin A. Agee. 1992. "Intelligence Preparation of the Battlefield (IPB): One Size Fits All?" 10
[50] Ibid. 11
[51] Department of the Army. 2004. *FM 2-0 Intelligence.* Washington, DC: Government Printing Office. 1-4

unrealistic to believe that our intelligence community can provide precise enemy intentions, but these intentions serve an important purpose. They serve to, as best as possible provide some certainty as how the antagonists will attempt to stop the friendly commander from accomplishing his aims. Being "right" is of no consequence if the friendly plan doesn't account for the enemy. The act of advising the commander on the endstate conditions for the enemy and terrain as well as defining the how the enemy and terrain will interact with friendly forces serves to better the friendly plan and increase the friendly plan's chance of success. IPB's unspoken goal is to make friendly COAs better, not to accurately predict the enemy. Accurately predicting the enemy COA is a benefit and an honorable goal, but historically unrealistic. Therefore, the measure of success for IPB cannot be accuracy; it *must* be success of the friendly COA. Unfortunately, the introduction shows that all too often, staffs lack this capability.

Prediction Capability

So we know how and why humans predict, by why is this challenging in problem solving and MDMP? Based on what we know about prediction, why can't our S-2s at the Battalion Level do what we are asking them? Why are some better than others in prediction? Why can some quickly see a pattern while others cannot? S-2's have challenges predicting enemy intentions because of deficiencies in experience and training. What about age? We have heard "wise" and "old" as linked throughout our lives. In the military, new officers are strongly encouraged to "listen to their Platoon Sergeants." Why is it that they know so much? How come "seasoned" tend to intuitively make good tactical decisions seemingly effortlessly? What about all that training and education received at West Point and Ft. Benning? Doesn't it matter? How long does this advantage continue? Ones abilities to recall are linked to a "maturity of mind." But it's not what you think. Simply put, increased mental representations are proportional to prediction capability.

---

[52] Department of the Army. 1994. *FM 34-130 Intelligence Preparation of the Battlefield.* Washington, DC:

Hawkins contends that a "young brain is slower to recognize inputs and slower to make motor commands because memories used in these tasks are higher up in the cortical hierarchy."[53] He further states that information has to flow "up and down" the cortical layers to "resolve conflicts."[54] This means that a younger individual cannot recognize the patterns as readily because not enough "successful" patterns have been named and recalled frequently. As a result, the cortex picks the "closest" pattern to predict the missing information. Younger individuals, have fewer representations simply by their lack of experience or storage of "successful" patterns. For example, when playing ball with a child, the child may not have developed the sensory-to-motor impulse that results in his ability to predict the location of the ball. It is likely to pass or hit him before he can move his hand to the position necessary to catch it. Although, some of the motor capability is linked to age, if one could experience as many "successful" catches as a major league baseball player, is it possible to store enough successful representation to overcome the age experience gap. However, this would involve a massive investment in time, effort, and dedication; most of which are not even possible for even the most aspiring young players. Much of the brain development that occurs in humans is complete by the time S-2's assume their duties. Therefore, experience, is the major deficiency that inhibits S-2's prediction capability.

Experience is the key prediction capability. Simply put, older minds have more representations to choose. The T-Shirt says "been there and done that," but really it should say been "been there and mentally represented that in my cortex." Experience is nothing more that images or representations of past events stored in the brain. Hawkins contends that "all predictions are learned by experience."[55] Hawkins cites his own experience in designing computers. He states that he can "quickly look at a product and see problems inherit in its

---

Government Printing Office. 1-4.
[53] Jeff Hawkins and Sandra Blakeslee. 2004. *On Intelligence.* New York: Times Books: Henry Holt and Company. 167
[54] Ibid. 167

design." He believes that his ability is the result of "25 years of designing computers." [56] More representations in the cortex mean that an individual has more patterns to choose from to match the existing conditions and predict the missing data or make decisions. Gary Klein in *Sources of Power* agrees that prediction quality and experience are proportional.

Klein's Recognition-Primed Decision Model (RPD) is a decision strategy that uses an individual's intuition to determine a reasonable reaction to solve a particular problem. Although RPD has its shortcomings, particularly with complex problems and those that require a high quality solution, it supports the notion that experience allows for high quality and rapid decisions based on the information presented. Klein's thesis is that the use of intuition versus deliberate decision making models will result in faster, acceptable decisions. Intuition, the key ingredient in his model, "relies upon experience to recognize patterns that indicate the dynamics of a situation."[57] Klein contends that leaders use these "patterns" to "size up a situation" and determine the best course of action. He goes on to contend that these leaders' experiences allow them to make decision faster and better than one following more deliberate decision making practices.

Hawkins would argue that Klein's "patterns" are no more than visual representations in the cortex. The leaders that Klein argues are making these recognition primed decisions are doing no more that what Hawkins is describing. Their cortex seeks the closest pattern and fills in the rest of the information automatically from a pre-existing pattern. This is the "intuition" that Klein is talking about. They know what to do, because they have experienced a similar situation and stored a recallable pattern. The mind is just doing the same action it does with sensory motor

---

[55] Jeff Hawkins and Sandra Blakeslee. 2004. *On Intelligence.* New York: Times Books: Henry Holt and Company. 119

[56] Ibid. 168

[57] Gary Klein. 2001. *Sources of power: How people make decisions.* Massachusetts: The MIT Press. 31. Klein refers to decision quality, specifically. However, one could argue that the leaders involved made predictions as to the outcome of certain situations. This led to them being intuitively able to predict the future.

inputs; it is mentally representing or perceiving the end condition and sending the commands to the part of the brain to stimulate the movement or action. In Klein's case, the actions are higher level cognitive events, but cognitive prediction events none the less. Your Platoon Sergeant is a capable decision maker (or predictor) simply because he has years of representations to choose from. In fact, he might have spent his entire career experiencing the kind of actions that a Platoon Leader is now called upon to visualize, describe and direct with only a few years of training and military education. Your training and education are good, and it begins to add to your capability, but individuals that experience events have the benefit of their cortexes being bombarded by, albeit the same, inputs from all their senses. They see it, hear it, smell it, feel it and more importantly recall it, whereas a Platoon Leader might read about it. Their experience is richer because of the number of times they have recalled similar patterns over the years. But don't underestimate training. Much of your Platoon Sergeant's experience is the result of training. Therefore, training increases prediction capability.

Training and education lead to experience, which increases prediction capability. This is similar to the discussion of experience. Simply put, once again, the more representations one has stored and the more times he is required to recall it, the more capable he is to predict. Looking back at the baseball analogy, after days, weeks, months and years or practice, a child gets more capable of catching the ball. Each "throw" results in the storage of mental representations. Correct "catches," are "named" so by the cortex and recalled faster. When a similar throw is made, the cortex will find the closest match. The more successful catches, the more successful representations are stored. In military operations, training leads to increased capability. Execution of drills results in seemingly "automatic" responses. Hawkins would suggest that these automatic responses are recalled patterns by the cortex.

Klein recommends similarly. He suggests training strategies to overcome shortcomings in experience. One such strategy is the rational decision model (e.g. MDMP). In the absence of

experience, individuals must "fall back on" analytical methods.[58] The rational decision model is analogous to the current processes of IPB and MDMP. Other methods involve the use of stories. Klein contends that stories put situations into a "meaningful framework" which can be used to "extract subtle expertise."[59] This is analogous to historical case studies used in training to illuminate certain principles. Klein also refers to the use of analogues. An analogue is an event "drawn from the same or similar domain" used to "understand the situation and make predictions."[60] The USMC uses analogies called Tactical Decision Games to conduct this type of training.

Klein's work complements Hawkins' work. Klein constantly refers to a "pattern matching process." He cites the basis of intuition as the ability to "recognizing (sic) things without knowing how we do the recognizing."[61] This supports Hawkins' idea that pattern matching precedes predictions, and that it is relatively unconscious. When faced with situations where there is little or no experience (e.g. patterns stored), Klein recommends stories and analogies to overcome the absence of knowledge.

What is fascinating and revealing is when no pattern is reached. In Klein's example of the firemen and roof collapse, the chief felt that something was not "right." His intuition caused him to withdraw his men and re-assess the situation. The roof collapsed and the men were saved. Klein argues this is the result of the commander's ability and experience. This is applicable because it was not the fact that the fireman made the right predictions; it was that his original predictions that illuminated data causing him to see variances in the situation. So, his men were not saved because he made a good prediction. They were saved because he recognized a variance. One could argue that had he not predicted, he might not had seen the variances. They might not have withdrawn. Therefore, being "right," although good and important, is not as

[58] Ibid. 103
[59] Ibid. 196
[60] Ibid. 197

important as predicting in the first place. What is important is being able to see variances in the mental representation. Even poor predictions which are often the case in the complex environment Army operations occur are useful because they show what an adversary is not doing as well as what he is doing.

Therefore, the quality of prediction is higher in an individual with more experience or training because he has more "patterns" to draw from. More patterns allows for more efficient associations and more effective determination of the closest representation. In military terminology, this is referring to a concept called C*oup d' Oeil*. *Coup d' Oeil* or "glancing the eye" is an ability to look at a particular situation and instinctively "know" the best solution. This is the essence of prediction.

Conclusions

Prediction involves representing *future* actions mentally in one's mind. It occurs both unconsciously and consciously. It is an automatic process that is fundamental to how humans perceive their environment. The mental representation of motor processes, as Hawkins describes it, drives action. The action typically occurs to fulfill some need. Maslow contends to satisfy needs, one must move from current conditions to future conditions; ergo one must act. In order to act, one must "think" about doing it in the sense that one must visualize the action before it occurs. Prediction is necessary for all action from breathing to food gathering. Higher complex actions such as problem solving follow similar neurological and psychological lines. Along psychological lines, one solves problems because of higher growth needs. With respect to neurology, perceptive inputs to the cortex are similar to sensory inputs, in the sense that they are received and processed the same. Military decision making requires individuals to visualize a *future* condition. These conditions include the enemy and terrain as a part of the condition. IPB is the process that assists the staff and commander determine said conditions. IPB results partly

[61] Ibid. 33

in predictions about the *future* state of the enemy. Right or not, these conditions are necessary to provide the impetus to action. Since the Army is largely action based, the predictions resulting from IPB provide the basis for operations. Prediction is as necessary as it is inevitable.

Imagine for a moment a world without prediction. There would be no warnings of an impending sickness, no advance warning of severe weather, no scholarships, no job interviews, no stock market, and etc. The list continues into the oblivion. In fact, this paper would not exist. There would be no SAMS because one of the desired outcomes of the application process is to predict if the student can successfully complete the requirements. Prediction is all around us, both in the motor sensory concepts and the problem solving contexts. So if one is not convinced that prediction is necessary and inevitable, then remove your spare tire from your car because your tires are capable of holding air!

Implications and Recommendations

The S-2 cannot perform the function as the IPB coordinator for staffs following current practices of training, education and assignments. As already determined, he lacks the experience and training to perform this function. As intelligence officers gain experience and get training, they become better equipped to perform IPB. However, this typically occurs after he is called to first perform the role of IPB coordinator, a battalion level S2. Although the assignment processes vary from unit to unit, it is likely that a relatively junior captain in experience and training might be assigned to a maneuver battalion. As a result, requisite training, education, and experience prevent a battalion level S2 from providing what the staff and commander need, with respect to IPB. This lack of experience results in an undeserved perception of intelligence officers and leads to friction between the current and future intelligence officers and the staff. This is an avoidable source of friction.

At the lower tactical level, maneuver branch officers have greater capability to perform IPB than most of the S-2's assigned to maneuver battalions. For example, from the very beginning of a maneuver officer's career, they are producers and consumers of intelligence. From the very beginning, a maneuver officer's basic course, he is given instruction on the fundamentals of IPB. Although the instruction is not specifically the staff process as outlined in FM 34-130, it is very similar. Afterwards, each student is tested on his ability to perform an estimate of the situation which includes terrain, weather and enemy analysis. As he moves to a unit, his training continues. Each mission of each day, the junior maneuver officers must think about the effects the enemy and terrain have on friendly operations. Although this is simplistic, this daily requirement to think of the enemy and terrain *from their perspectives* builds invaluable experiences that enhance his ability to predict the actions of his adversary. Furthermore, the junior maneuver officer is provided constant feedback by the fighting itself. If he incorrectly predicts the actions of his adversary, he is reminded of it by failing in training or sustaining casualties in war. As the maneuver officer progresses the stakes increase. During his career course, the maneuver officer must perform analysis of the enemy and terrain as a part of the curriculum. However, he is also required to learn IPB as a staff process. In all, he is evaluated individually seven times on his ability to perform enemy analysis. It is an essential task, and must be achieved to graduate the course. In the line, maneuver company commanders have no intelligence capability residing at their level (e.g. they are their own S-2). This causes them to perform the continuous IPB described already. Finally, predicting enemy actions and intentions requires experience and training on the enemy's weapons system. At the lower tactical levels, this means having an understanding of how units fight. Warfighting is the core of a junior maneuver officer's being.

The career path of an intelligence officer from inception to battalion S-2 does not provide the same type of experience that a maneuver officer receives. Although, he or she may have received extensive training in IPB, it is unlikely they have performed the task in its entirety,

individually. Additionally, maneuver officers are almost exclusively assigned to maneuver battalions. Intelligence officers have many billets in which they may have no exposure to combat or warfighting. This becomes problematic when they are assigned back to a tactical assignment requiring predictive capability.

Junior intelligence captains assigned as S-2s are essentially set up for failure. Intelligence officers at the battalion level are likely to be the least experienced or trained captain in the organization. This credibility gap would present numerous obstacles to overcome before reaching synthesis as a staff in decision making. This produces a dilemma which results in credibility and communication difficulties. Therefore, it is largely problematic to have our intelligence officers coordinating staff processes that should be performed by the entire staff. Consider this hypothetical, but very accurate vignette.

A captain intelligence officer arrives and is assigned to a division. If he is lucky, he will be assigned to a Brigade S-2 shop. However, if not, he can be assigned directly to a maneuver battalion. Given the amount of training received, he is immediately put at a disadvantage. During decision making, in addition to other products regarding terrain and weather, he must visualize the actions of the enemy; a system for which he has few previous mental representations. Victimized, he follows his training. His cortex, unconsciously, picks the closest representation based on his experience. He presents this as the enemy plan. This representation may be lacking if all an individual has to choose from is some education or Advanced camp experience. This is an impossible situation. Because of bad procedures, staffs typically don't discover this until the mission analysis brief. Then, the S-3, with almost ten years more experience, lambastes the S-2 stating that the enemy "would never do that!" The S-2 now is presented with higher needs. His self-esteem needs overtake his self actualization needs. He becomes defensive. In an effort to reconcile, the enemy situation is shelved, and largely ignored. This has huge second and third order effects. First, the S-2 loses credibility. This creates a wall that prevents communication. Later, when he does find that "critical piece of information," he is

largely ignored. Next, a weak enemy visualization prevents effective reconnaissance planning. Without some specifics as to what information is needed, as well as some prioritization, reconnaissance efforts are squandered. Finally, as the planning process continues, efforts to produce an enemy antagonist that will make the friend COA more flexible go unheeded. The plan progresses like lemmings to the cliff. There is no shared visualization of the terrain, weather, and civil population, no focus of reconnaissance, and no understanding of the enemy that lies between you and your aims. Failure is inevitable! Intelligence officers face this dilemma constantly. CTC Trends clearly provides the evidence to prove the above hypothetical situation. Changes of all, some or part of our institution could possible help the besieged S-2.

One possible recommendation might be to lower our expectations for intelligence and intelligence products. This sounds simple, but with some commands and, to some extent, the American people, there is an expectation that the intelligence community can accurately predict the intentions of our enemies. At the macro level, this expectation has largely been unfulfilled. From the Pearl Harbor to today, intelligence agencies have failed to accurately predict the intentions of our enemies. The introduction lists only a few of such failures. However, closer examination shows that the "failures" weren't complete. Post event investigations from Pearl Harbor to Iraq identified individuals that were at least partially accurate in their predictions. Whether they were "right" or "wrong" should not be the question. The question should be, "did the intelligence estimate increase the chances of success of achieving the friendly aim?" If the answer is "yes," then the prediction contributed to the overall success. The fullness of IPB and its associated predictions only serves to better the course of action. Lowering expectations would serve to improve the overall decision making process. This goes back to IPB's purpose. Its purpose is to provide the information necessary to support the commander's decision making. As discussed before, this is only part of the equation. The commander also *considers* the effects of terrain, weather, population, as well as numerous other tangible and intangible factors. Therefore, no single incorrect prediction should ever be the downfall of the entire mission.

Another possible solution could be to change the name. This seems semantic, but the roots for "predict" mean to "pre-see." This puts an unnecessary standard on the individual responsible for providing this "pre-see." Forecast, which means to "suggest what will happen," carries significantly less intellectual standards than the word "predict." Although it means essentially the same thing, forecasting implies a lower standard for its eventual truth. For example, in weather where the word is most commonly used, many maintain a degree of skepticism; mainly due to the local weatherman's bad record. However, we still tune in prior to trips or events to determine if we need our umbrellas or not. In business, all advertisements end with a disclaimer. This is so that stock and mutual fund companies are not held liable in the event of unforeseen price drops. Even in military operations, the S-2 and/or Staff Weather Officer (SWO) forecast the weather at the time of the operations. Since there are no guarantees (especially with the weather), the commander must decide despite the weather. The weather forecast only serves to identify the possible conditions at the time of decision. The act of predicting the weather is sure to be wrong, but its forecast provides the information that increases the chances of success because the commander is considering weather effects and its impact on the operation. Since the expectations for weathermen are low, Commander's could extend the same courtesy to S-2s.

Another possible name change that might help would be to use hypothesis versus enemy COA or intention. A hypothesis is an unproved theory. It is a "tentative explanation used as the basis for further investigation."[62] This would allow staffs to approach enemy options more thoroughly. This differs from our current concept slightly. In scientific method, the object is to disprove the hypothesis, not prove it. In this case, reconnaissance would seek to disprove the enemy options. This is the primary thesis of Heuer's work. The advantage of this approach would be the avoidance of confirmation bias. Information that supports a hypothesis would not

[62] Encarta Online Dictionary. Access from MS Office on 13 FEB 07.

receive as much attention as information that refutes it. However, the disadvantage is in time. Multiple hypothesis development and testing require time. Often at the tactical level, time is premium; thus forcing the consumers of intelligence to require a judgment before gaining clarity.[63]

A simple name change might induce lower standards on the challenge of predicting the enemy's intentions. This doesn't change what the commander does with the information. He still needs and uses it to guide is decision making. Since this visualization drives action, the absence of *any* information would lead to passiveness and inactivity. Since predicting is an automatic and unconscious neural, it is slightly better to have an informed guess than nothing. By lowering expectations, then need of self esteem is met. Now the need to know and understand can drive the action of the staff, which could result in more informed decisions.

Doctrinal changes offer a very possible and relatively inexpensive solution to the problems identified in the introduction. Although the process itself if good, IPB in its current form has timing problems. IPB and its products are not synchronized with the commander's visualization. Doctrine recommends a simultaneous process. However, the commander is required to provide commander's intent and guidance at the end of the mission analysis. There is little time for the commander to benefit from the efforts of the staff or the staff to benefit from the experience of the commander. As a result, sometimes the commander's intent and/or guidance is weak, or the S-2 and commander disagree on the enemy. These both have disastrous results on the rest of MDMP.

If the commander's visualization is weak, the planning process continues without the benefit of aim. Just like in rifle marksmanship, without aim, hitting the target is unlikely. Commander's visualization provides the guidance necessary to continue the planning process.

---

[63] Richard J. Heuer. 1999. Psychology of Intelligence Analysis. Washington, DC. Central Intelligence Agency. Much of this paragraph is paraphrased from multiple sections throughout the book.

Without it, a shared understanding of the problem is unlikely. Worse as time progresses, the commander will eventually visualize their endstate. As we discovered, the cortex automatically seeks to fill in the missing information. This process continues until reconciled. Many times the commander will "sleep on it." Just like the advice tells, allowing the time for the cortex to work often generates an effective visualization. However, the timing is important. Without the visualization (or mental representation), the staff will progress forward. Humans, as we have discovered, will take the closest "match" and plan based on that. Picking the same "match" as your experienced commander is problematic because both see the problem through different lenses. Time will be wasted because the commander will come back and require the staff to change direction. In a time constrained environment, this reduces the quality of the plan and reduces the plan's chances of success. Shared visualization and being able to "think like your commander" is the goal. Under the current MDMP process, the timing of the presentation of the analysis of IPB and the commander's visualization is not synched. They occur in a vacuum. When the information is presented during the mission analysis brief, it is only by chance, the commander and S-2 share the same vision of the enemy intentions. The products of IPB, normally briefed as a part of the mission analysis brief must be briefed sooner to allow the commander and staff to gain a shared understanding of the terrain, weather, civil population and time.

If the commander and S-2 leave the mission analysis without a shared understanding of the enemy, the subsequent steps of the planning process face numerous obstacles. The commander, at least at the tactical level of war, is normally the most experienced person in the organization. Although this varies as one rises up the levels of war, it is safe to say that the commander knows the enemy at least as well as his S-2. As we learned before, man seeks automatically to fill in the missing information as the result of the "perceived difficulty." The commander will continue to "plan" in his mind, ways to solve the "difficulty" presented by the enemy (that resides largely in his head). The S-2's enemy, at least by process, will become the

enemy by which the friendly courses of action are developed. Unless incredibly lucky, it is unlikely the two will be similar. This will result in more confusion and wasted time or worse a "self-esteem" collision in the OPORD or Combined Arms Rehearsal. No commander should ever state in an OPORD or Rehearsal that he "doesn't agree with the S-2." The shared visualization is a must to provide the impetus for future action. Therefore, the timing of IPB in doctrine prevents the commander and staff from fully benefiting from a shared understanding of the enemy, terrain, civilian population, system, and problem. IPB doctrine's locality as a sub-step of mission analysis is a prime cause of challenges in staff integration.

IPB's is buried in doctrine. IPB doctrine resides in the intelligence functional manuals. This results in a lack of effort by all the battlefield functions to train their officers to perform their IPB responsibilities. This and a decline in the staff estimate process which includes a reverse-BOS type analysis, results in the IPB being delegated to the intelligence community. Even after efforts were made in the 1990s to integrate it into MDMP, it only became a *sub-step* of mission analysis. This produced a hopeless conflict of interest. Immediately following the receipt of mission, the staff is buried in a "sea of uncertainty." Essentially, all functions must work to reduce the uncertainties to provide viable options of employment for the commander. As a result, all members of the staff during mission analysis are hopelessly overburdened with their own functions (including the intelligence function!). As a result, only leftover effort and resources beyond the S-2 are applied to IPB; one step of 17 during mission analysis.

The S-2 by default becomes the sole representative of the enemy. Great efforts are made by quality people, but S-2s lack the mental representations (e.g. experience and training) to recall a quality sequence. The sequences recalled lack substance and his analysis is largely ignored. As a result, the S-2 often does the IPB by himself or with others like him, without the benefit of expertise in other battlefield functions. These results in all the observations presented earlier; incomplete COAs (both friendly and enemy), incomplete steps of MDMP, incomplete R&S

Plans. Worse there often is disagreement of the enemy and lack of collective understanding of the battlespace. The unintended consequences affect the entire staff and command.

Not only must the commander understand the battlespace, the staff must understand it as well. This is imperative to understanding the problem in the context of the enemy, terrain and civil population. As the problems the military faces continue to increase in complexity and decrease in familiarity, commanders will need help visualizing the endstate and understanding the aspects of the problem. The staff must help him do this. Currently, one can argue effectively, that in practice, most staff members become only partially aware of the terrain and enemy during the mission analysis brief. This exasperates subsequent steps of the planning process. Poor understanding of the enemy, terrain, weather, and civil considerations results in delays in subsequent planning, as well as low quality employment recommendations.

Make IPB its own step in MDMP. It could be called Intelligence Preparation of the Battlespace or Area of Operation Assessment. Place this step before Mission Analysis and arm it with its own WARNO and Briefing requirements. By preceding Mission Analysis, the entire staff can participate because it has been de-conflicted with the other steps of mission analysis. Each staff member would be responsible for the impacts of terrain, weather, and civilian population of their function. Reverse IPB could be codified making each staff member think about the enemy's capability that resides in his own function area then combine their experience into a full set of enemy options. The analysis of impacts of terrain, weather, and civil population completed by the entire staff would increase the possibility of gaining a shared understanding of the battlespace. This plus traditional mission analysis procedures codified by doctrine could result in a far better understanding of the problem.

Now, enemy option development would become a collective process versus an individual one. This in itself has several advantages. The aspects of prediction capability discussed earlier would now be shared across the staff. The collective capability of the group would compensate for any lack of experience of any one staff member. This allows the staff to see the problem

through more lenses. Using a consensus approach, more enemy options can be explored. This process would result in a higher and shared understanding of enemy capabilities and options; essentially, combining the approaches of both Schwien and Sweeney. Using this type of system allows for easier integration of regional or functional experts. This would enhance staffs at the lowest level to study more complex environments. This could include codification of System of System Analysis or an equivalent at the lower tactical level to infuse the necessity of understanding more than the tactical aspects of a problem especially in counter insurgency operations. No matter how one sees this, staffs would emerge from this process with a better understanding of the terrain and enemy as well as the possible effects the enemy will have on each member's functional areas. However, socializing the program is not without its pitfalls. Staffs must guard against groupthink, confirmation bias, as well as politics and just old fashion wasted time. To avoid this, IPB must be a staff action with the commander as the lead and the XO/Chief of Staff and the coordinator. Current S-2s at the Battalion level and somewhat at higher levels cannot coordinate this effort.

One might think that time would preclude this from being a feasible option. The Infantry Officer's Career Course (ICCC) conducts extensive staff training at the battalion and brigade level during their course. This staff training includes role-playing all the staff positions through a variety of tough and challenging problems. During this process an instructor experimented with this robust form of reverse IPB. During more than 12 MDMP exercised over several months, staffs were required to fully participate in IPB *prior* to moving to more traditional aspects of mission analysis. The experiment yielded preliminary results that showed that time spent earlier was compensated in subsequent steps by better understanding of the problem. Additionally,

subsequent steps of the process we more efficient and effective because all the members of the staff shared a common visualization.[64]

Organizational and personnel changes could overcome the deficiencies in experience and training. For example, at the lower tactical levels, S-2s could be manned by maneuver branch officers. Before the formation of the intelligence branch, this was practice. During WWI, when the intelligence elements were first formed, Infantry officers manned these sections. This made sense because the sections were large and included observer/scouts, fire direction elements, as well as analytical elements. Combined arms and warfighting were a standard part of an early intelligence officers training because he likely would return to the line to perform combat tasks. As it stands, Patton's G2 today would not "likely face reassignment" since he cannot return to the line (which was a bad thing in those days). Today, if an S-2 is not performing, he would likely be fired, and removed from the service. As discussed previously, maneuver officers are specially trained in IPB and combined arms. They not only know IPB, they also understand the capabilities of enemy weapon's systems. Even as an assistant, their expertise would greatly improve the prediction capability of the S-2 section. The disadvantages of a personnel change of this magnitude would be twofold. First, maneuver branches would have literally hundreds more requisitions placed on an already strained personnel system, and second intelligence officers would lose the opportunity to grow at that level as fully as being the S-2 could produce. A possible "zero sum" solution could be to switch the Assistant S-3 and S-2 in maneuver battalions and brigades. In both cases, the advantage would be an increased focus on collection, packaging and dissemination, as well as analysis of enemy capabilities and employment options. Each

[64] Michael D. Acord, MAJ USA. 2007. Time spent as a small group instructor from June 2001 to June 2003. Part of the program included a Battalion Staff Phase. The "experiment" was conducted over several tactical problems and staff groups over 18 Months. The result included less time spent in wargaming restating the enemy objectives, aims, and tactics because all individuals had detailed knowledge of it. Additionally, credibility to the intelligence process was gained. When asked by a "guest commander" a question regarding the enemy use of Artillery, and the FSO answered immediately, the commander reconciled his visualization.

change would incur costs. Other programs offer some help. An effective program currently used by the US Army, called the Branch Detail Program, produces good intelligence officers at the tactical level. In this program, officers spend the first four years of their service in combat arms and then transfer to the Intelligence Branch. This program offers promise to overcome deficiencies noted, but personnel requirements in other intelligence functions overshadow the program. Priorities, out of necessity, go to the other functions and risks are assumed in tactical intelligence.

Another possibility would be to man Battalion S-2s with Majors. This has been recommended several times. During the interview with BG "Spider" Marks, he communicated to us that this topic has been debated over the years. He stated that intelligence leaders during his career have recognized the "disadvantages of more junior intelligence officers." However, he cited the personnel strain and the need to "grow" intelligence officers as offering more advantages.[65] Schwien makes a similar argument. He stated that "no green second lieutenant is suitable" for combat intelligence at the battalion level. Schwien goes even further. He states that "the Battalion S-2 must be as well qualified as the General Staff Officer serving as the Division G-2." He further supports this in stating that only captains with "considerable experience" and "a thorough course of training" would "avoid the bitter and costly experiences" of WWI.[66] Sweeney offers that if the "G2 is not competent to be a G-3; then he is not competent to be a G-2."[67] He infers in this statement equivalence in rank, education and training. With this capability, the S-2 might be able to coordinate IPB as in its current form. Greater experience, training, rank, seniority, and age might be what it takes to make the current system work as advertised. More study would be necessary. However, the obvious challenge to this is the personnel strain it would

[65] James "Spider" Marks (ret.). MG, USA. 14 November 2006. Interview by MAJ Acord. CARL Library.
[66] Edwin E. Schwien. 1936. Combat Intelligence: Its Acquisition and Transmission. Washington DC: The Infantry Journal, Inc. 98
[67] Walter C. Sweeney. 1924. *Military Intelligence: A New Weapon in War*. New York: Frederick A. Stokes Company. 135

cause. Leader development changes could provide options for resolving the deficiencies in IPB without straining the personnel system.

Leader Development and training might help S-2s and staffs better perform their roles in IPB. Attendance of a "maneuver" career course such as the Infantry Captains Career Course (ICCC) at Ft. Benning or the Armor Officers Career Course (AOCC) at Ft. Knox provide the tactical knowledge that would assist an S-2 make predictions as to the employment of an enemy's weapons systems. As stated before, ICCC and AOCC devote considerable effort to IPB. The trade off would be training in the other intelligence functions. Training provides the visualizations necessary to help the S-2 and staff tackle problems in the future. Tactical Decision Games, stories and vignettes as suggested by Klein serve to overcome the deficiency. Of course, self study can help. Some intelligence officers have overcome the challenges of training and experience. For example, one Battalion Commander in a Marine Recon Battalion explained how his S-2 overcame his deficiencies in training and experience. He made up for it by vigilant study. The Battalion Commander said that his S-2 hardly slept. He described this officer as always on the search for knowledge. When conflict arose as to the intentions of the enemy, the Marine S-2 could support his predictions with vast knowledge gained through study. He overcame has lack of experience by training himself. His insatiable quest for knowledge allowed him to overcome the deficiencies posed by lack of training and experience.

Finally, one must ask the question, "So what? This is all tactical IPB. How does this apply at the operational level of war?" An experienced and competent (intelligence) officer explained to me that an intelligence officer's real job is ISR synchronization and leverage of national to tactical assets. The author certainly agrees with this fact. However, the IPB that begins at the lowest tactical levels leads to the questions that the national level assets seek to determine. All the spy satellites in the world are useless if they have not questions to answer. Arguably these questions are a result of enemy analysis conducted during IPB. Consistent poor performance of this staff process does not serve anyone, tactical or operational. Current

processes can be improved. Second, if commander's impressions of intelligence officers are negative at the tactical level, it is possible that he or she will carry those perceptions to higher levels. This hampers the collective unit and can hurt operational level functioning.

IPB in current practice has been delegated to the point of failure. Doctrine describes IPB as a staff function, but the evidence in the introduction shows that staff members rarely perform their IPB functions in a manner that promotes understanding of the environment. Timing is not synchronized with the commander's visualization, and the staff does not benefit from a shared visualization of the battlespace. The staff moves forward without a clear understanding of the problem and wastes time. The commander modifies his guidance and intent to be vague because he lacks an understanding of the terrain and enemy (he's busy commanding). As a result, one aspect of the future condition sought by the commander and staff now becomes left to chance. Without the visualization, the unit and commander must react, not act. Initiative is yielded! The enemy, rival, civilian population or maybe just the terrain is imposing its will on the unit, not the other way around. The unit has delegated to the point of failure. Something must be done to reverse the trend of years of bad practice. Without correction, failure is imminent!

- M.D.A

BIBLIOGRAPHY

Agee, Colin A. 1992. Intelligence preparation of the battlefield (IPB): One size fits all?

Aldeman, Leonard, Michael Donnell, and Ruth Phelps. 1984. *Intelligence Preparation of the Battlefield; Critique and Recommendation.* Alexandria, VA: Army Research Institute.

Bigelow, Michael E. 1992. The First Steps: Battalion S2s in World War I. *MIPB: Military Intelligence Professional Journal,* 26.

Bovy, Joseph J. 2002. Filling the gaps: New Information Sources for Operational Commanders in Third World Countries.

Brady, Michael D. 2000. The S2: Not Just an Intelligence Officer. *MIPB: Military Intelligence Professional Journal,* 36.

Brake, Michael A. 2004. Brigade Combat team (BCT) Intelligence Operations. *MIPB: Military Intelligence Professional Journal,* 27.

Brown, Lawrence T. 2004. The Enemy We Were Fighting Was Not What We Had Predicted." What is Wrong With IPB at the Dawn of the 21st Century?

Creveld, Martin Van. 1998. *Command in War*. Cambridge, MA: Harvard University Press.

Clausewitz, Carl von, *On War.* Princeton University, NJ, 1976. Edited and translated by Michael Howard and Peter Paret.

Department of the Army. 2006. *FM 2-01.3 Intelligence Preparation of the Battlefield (Final Draft).* Washington, DC: Government Printing Office.

Department of the Army. 2003. Lessons Learned: Six Things Every "2" Must Do-Fundamental Lessons From OIF. *MIPB: Military Intelligence Professional Journal* Volume 29, no. 4.

Department of the Army. 1994. *FM 34-130 Intelligence Preparation of the Battlefield.* Washington, DC: Government Printing Press.

Department of the Army, Center for Army Lessons Learned. 2006. CTC Quarterly Bulletin. Jan - Mar, no. 06-24.

Department of the Army, Center for Army Lessons Learned. 2006. Initial Impressions Report Mission Readiness Exercise JRTC Rotation 05-07, no. 06-13.

Department of the Army, Center for Army Lessons Learned. 2005. JRTC Trends. *CTC Trends* 1st and 2nd Qtr FY05, no. 05-36.

Department of the Army, Center for Army Lessons Learned. 2005. NTC Trends. *CTC Trends* 1st & 2nd Qtr FY05, no. 06-12.

Department of the Army, Center for Army Lessons Learned. 2005. NTC Trends. *CTC Trends* 3rd & 4th Qtr FY04, no. 06-06.

Department of the Army, Center for Army Lessons Learned. 2004. NTC Trends. *CTC Trends* 1st & 2nd Qtr FY04, no. 06-07.

Department of the Army, Center for Army Lessons Learned. 2003. NTC Trends. *CTC Trends* 3rd & 4th Qtr FY03, no. 05-09.

Department of the Army, Center for Army Lessons Learned. 2003. NTC Trends. *CTC Trends* 1st & 2nd Qtr FY03, no. 03-30.

Department of the Army, Center for Army Lessons Learned. 2002. JRTC Trends. *CTC Trends* 4th Qtr FY 01 and 1st Qtr FY02, no. 02-18.

Department of the Army, Center for Army Lessons Learned. 2001. JRTC Trends. *CTC Trends* JRTC Leader's Training Program, no. 03-10.

Department of the Army, Center for Army Lessons Learned. 2001. JRTC Trends. *CTC Trends* JRTC Leader's Training Program Observations, no. 01-4.

Department of the Army, Center for Army Lessons Learned. 2001. NTC Trends. *CTC Trends* 1st & 2nd Qtr FY01, no. 02-17.

Department of the Army, Center for Army Lessons Learned. 1996. JRTC Trends. *CTC Trends* 1st and 2nd Qtr FY96, no. 02-16.

Funkhouser, Anthony T. 1999. An Assessment of the IPB Process at the Operational Level.

Grimsley, William F. 1994. Intelligence Preparation of the Future Operational Battlefield.

Heuer, Richard J. 1999. *Psychology of Intelligence Analysis.* Washington, DC. Central Intelligence Agency

Kem, Jack. 2005. An Adaptive Methodology for Developing Enemy Courses of Action. *MIPB: Military Intelligence Professional Journal,* 13.

Marks, James "Spider" (ret.). MG, USA. 14 November 2006. Interview by MAJ Acord. CARL Library

Marsella, Nicholas R. 1994. The Roll of the G2 Planner. *MIPB: Military Intelligence Professional Journal,* 28.

Maslow, Abraham. 1943. "A Theory of Human Motivation" *Psychological Review*, 50, 370-396.

Menoher Jr., Paul E. 1990. Vantage Point. MIPB: Military Intelligence Professional Journal.

Mikaloff, Robert T. 1999. Intelligence Preparation of the Battlefield in Peace Operations: Is it Time for a Change?

Norton, David E. 2000. The S2 Warrior? MIPB: Military Intelligence Professional Journal, 38.

Phillips, Joel R. 1995. Keys to the S2's Success: The NTC Experience. *MIPB: Military Intelligence Professional Journal.*

Rodriguez, Guillermo A. 1991. Intelligence Preparation of the Battlefield (IPB): Is it Worth the Effort?

Schwien, Edwin E. 1936. *Combat Intelligence: Its Acquisition and Transmission.* Washington DC: The Infantry Journal, Inc.

Smith, Thomas R. 1998. Wargaming at the NTC: Decision Point--PIR Linkage. *MIPB: Military Intelligence Professional Journal*.

Smith, Thomas, David G. Puppolo. 2001. IPB with a Purpose. *MIPB: Military Intelligence Professional Journal,* 4.

Sweeney, Walter C. 1924. *Military Intelligence: A New Weapon in War.* New York: Frederick A. Stokes Company.

Thaden, Russell H. 1986. Intelligence Preparation of the Battlefield and Predictive Intelligence.

Wegner, Neal J. 1997. Concepts and Doctrine. MIPB: Military Intelligence Professional Journal, 52.