

CCIR for Complex and Uncertain Environments

A Monograph

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Abstract

CCIR for Complex and Uncertain Environments by MAJ Marc A. Spinuzzi, U.S. Army, 111 pages.

The purpose of this monograph is to examine the concept of Commander's Critical Information Requirements (CCIR) and determine if the doctrine is suitable for particularly complex operations like counter-insurgency operations (COIN). Commanders involved in COIN have developed new tactics, techniques, and procedures (TTPs) for creating and using CCIR. These TTPs often directly contradict existing doctrine and result in information requirements which fail to meet the criteria established for conventional warfare. These TTPs result from a doctrine that is ambiguous, confusing, and overly complex.

CCIR developed in doctrine to accomplish three distinct purposes – to maintain situational understanding, to support decision points, and to manage information. A fourth purpose – to support assessment – is a relatively new addition. These purposes were all developed with conventional warfare in mind. In fact, lessons learned from unconventional wars against insurgents or guerrillas were rarely applied to the concept of CCIR, and were systematically removed from doctrine when they did appear.

Army doctrine distinguishes problems by the level of complexity inherent in the situation. COIN represents an ill-structured, or complex, problem. C2 in complex environments must stress flexibility and adaptability, and will result in more adjustment decisions than execution decisions. Successful decisionmaking in complex environments relies not only on a foundation of experience, but also on certain useful characteristics or habits. There are a number of practices common to expert decisionmakers: experts have a knack for setting and defining goals; experts anticipate that they will have to adapt their plans; experts tend to have a higher tolerance for uncertainty, and they have developed several specific tactics for dealing with it. Three of the four purposes of CCIR – maintain situational understanding, support decision points, and support assessment – are related to tactics employed by expert decisionmakers. More specifically, they reflect how successful decisionmakers deal with uncertainty. The fourth purpose – to manage information – is intended to prevent information overload. This purpose is not supported as a valid tactic to deal with uncertainty because it prevents the commander from interacting with the very information he must see in order to recognize trends and patterns. While information overload is a real concern, it cannot be solved by using a succinct list like CCIR to limit information flow to the commander.

CCIR can be considered to be part of an intuitive decisionmakers' response to uncertainty, and are highly suitable for use in a complex environment. However, their use is contingent on a clear and simple description of CCIR purposes, and an understanding of the difference between *execution* and *adjustment* decisions. CCIR serve different purposes depending on the environment. Regardless of the type of operation, CCIR during planning and preparation will tend to focus first on situational understanding. Commanders will look for general information to help them recognize the situation and visualize an acceptable solution. During execution, they will still need some CCIR to maintain situational understanding, but the priority will shift. Operations in well- to medium-defined problems – conventional warfare, for example – will tend to be short duration, have less uncertainty, greater detail, and more execution decisions. As a result, CCIR will tend to focus primarily on supporting decision points, and then on supporting assessment. Operations in ill-defined problems – COIN, for example – will tend to be long duration, have great uncertainty, less detail, and more adjustment decisions. As a result, CCIR will tend to focus primarily on assessment, and then on decision points.

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Introduction

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’s forces; certainty about the manifold factors that together constitute the environment in which the war is fought, from the weather and the terrain to radioactivity and the presence of chemical warfare agents; and, last but definitely not least, certainty about the state, intentions, and activities of one’s own forces.¹

Martin Van Creveld

In 1997, the final version of Field Manual 101-5 (Staff Organization and Operations), introduced Commander’s Critical Information Requirements (CCIR) as an essential component of Army Command and Control (C2) doctrine. A result of over 15 years of research and discussion, CCIR represented a new attempt to develop certainty in decisionmaking on the modern battlefield. Subsequent doctrinal manuals expanded the concept of CCIR into a critical component of the Army’s *visualize-describe-direct* methodology for decision-making.² CCIR are “elements of information required by commanders that directly affect decisionmaking and dictate the successful execution of military operations.”³ This definition is broad and vague, and only hints at the practical purposes CCIR should serve in support of the commander’s decisionmaking. The doctrine for CCIR was developed to support conventional military conflicts, but has recently been put to the test in unconventional operations in places like Bosnia, Kosovo, Afghanistan, and Iraq.

COL Gregory Fontenot, as the commander of the 1st Brigade of the 1st Armored Division, deployed to northeast Bosnia in December 1995. His mission was not a conventional offensive or defensive one. Instead, he found himself responsible for implementing the provisions of the Dayton Accords in what the Army refers to as a “Stability Operation”. He initially developed

¹ Martin Van Creveld, *Command in War*, (Cambridge, Mass.: Harvard University Press, 1985), 264.

² The Army replaced Field Manual (FM) 101-5 with two separate manuals – FM 6-0 (Mission Command: Command and Control of Army Forces) published in August of 2003, and FM 5-0 (Army Planning and Orders Production) published in January of 2005.

Priority Intelligence Requirements (PIR) – an important sub-set of CCIR – linked to specific decisions he expected to make. However, after a short time he “abandoned PIR in the classic sense”. Faced with a new and complex problem, he found that his conventional PIR quickly became irrelevant. Several factors impacted his understanding of CCIR: he found it extremely difficult to anticipate specific decisions; he could not know when to expect answers to his questions; and many of his questions could no longer be answered through technical means.⁴

COL Fontenot’s initial CCIR followed rules designed to support conventional battles – rules developed in the 1980s when the Army created the AirLand Battle doctrine. His CCIR were linked to decisions anticipated by the plan and were generally related to targeting and tactical engagements. In his own words, there was “a science, a physics, to making [CCIR] work in a conventional environment.” After only a few weeks in Bosnia he began to develop CCIR which did not follow the old rules. Rather than ask questions related to targeting, he began to ask “questions to determine how effective we were.” Instead of looking for enemy weapons systems he began to ask about demographics, economics, and cultural factors. Rather than focus his collection on specific decisions, COL Fontenot instead began to look for “more general intelligence requirements.” Looking back on his experiences in Bosnia, he noted that “PIR is a management tool [which] does not work in an environment for which it is not optimized.” Pointing out the differences between conventional operations and the more complex stability operations, he identified three things which allowed him to make use of CCIR in Bosnia – “detailed planning, tolerance of ambiguity, and the ability to accept that you can’t control everything.” He also pointed out that conventional military operations present few major

³ *FM 6-0 2003: Mission Command: Command and Control of Army Forces*, (Washington, DC: U.S. Department of the Army, 2003), B-14.

⁴ COL (ret) Gregory Fontenot, Commander, 1st Brigade, 1st Armored Division in Bosnia-Herzegovina from December 1995 to November 1996. Interview at Fort Leavenworth, KS, 5 March, 2007.

decisions to commanders, but that in Bosnia he made important decisions “every day.” COL Fontenot’s experience was not unique.⁵

The purpose of this monograph is to examine the concept of CCIR and determine if the doctrine is suitable for particularly complex operations like counter-insurgency operations (COIN). Chapter One summarizes the Army’s doctrine for CCIR, introduces several key terms and concepts, and discusses several issues which should be addressed. Commanders involved in COIN have developed new tactics, techniques, and procedures (TTPs) for creating and using CCIR. These TTPs often directly contradict existing doctrine and result in information requirements which fail to meet the criteria established for conventional warfare. These TTPs result from a doctrine that is ambiguous, confusing, and overly complex.

Chapter Two consists of a literature review tracing the historical development of CCIR in Army doctrine. Beginning shortly after World War I and going through doctrinal manuals published as recently as 2006, it examines the development of CCIR in three distinct periods. Each of these periods contributed to the current understanding of CCIR, including the four major purposes they accomplish. The review focuses on the historical and theoretical principles which resulted in CCIR. It also establishes that they were developed with conventional warfare in mind. In fact, lessons learned from unconventional wars against insurgents or guerrillas were rarely applied to the concept of CCIR, and were systematically removed from doctrine when they did appear.

Chapter Three addresses the use of CCIR in complex environments, particularly counter-insurgency operations. It examines complexity theory and the implications it has for military C2. It also reviews recent studies of intuitive decisionmaking and links three of the four CCIR purposes to tactics employed by expert decisionmakers. Chapter Three also tackles the issue of

⁵ Ibid.

information overload and determines that CCIR alone cannot prevent it. Chapter Four concludes this monograph with recommendations regarding doctrine for CCIR.

Chapter One: CCIR in Army Command and Control Doctrine

Army doctrine makes a distinction between *command* and *control*. The manual for C2 states that they “are interrelated. Command resides with commanders... Command is mostly art but some science. Control is how commanders execute command. It is mostly science but also art.”⁶ Command consists of three elements – authority, *decisionmaking*, and leadership. Control also consists of three elements – *information*, communication, and structure. CCIR appear as important elements of both *decisionmaking* and *information management*, and therefore as elements of both command and control. However, CCIR developed for these two areas have conflicting goals. Army doctrine describes two separate methods for developing CCIR, fails to clarify the underlying purposes of CCIR, and creates a set of information categories that are inconsistent, confusing, and unhelpful.

The purpose of this chapter is to summarize the Army’s doctrine for CCIR and introduce several key terms and concepts in current doctrine. It consists of five sections. The first section introduces CCIR as a component of Army decisionmaking, an element of Command. It demonstrates that CCIR result from an intuitive process conducted by the commander, and that commanders are more likely to focus CCIR on *adjustment decisions* rather than *execution decisions*. The second section discusses CCIR within information management, an element of Control. It argues that CCIR, for this purpose, result from an analytical process conducted primarily by the staff, and that the staff is more likely to focus CCIR on *execution decisions* rather than *adjustment decisions*. A third section includes a short discussion of the two sub-categories of CCIR – Priority Intelligence Requirements (PIR) and Friendly Forces Information Requirements (FFIR). It shows that, while FFIR have few special characteristics, PIR have

⁶ FM 6-0, (1-3)

clearly defined criteria designed to support both *execution decisions* and the tasking of intelligence collection assets. As a result, most CCIR developed by the staff will match the unique characteristics of PIR and will support decision points anticipated through planning. Section four covers the doctrinal purposes of CCIR. It argues that doctrine gives so many different reasons for using CCIR that the concept is unfocused and incomplete. In order to simplify the discussion, it introduces four general purposes of CCIR – to maintain situational understanding, to manage information, to support decision points, and to support assessment. These purposes summarize the main reasons commanders and staffs generate CCIR, and appear in a historical review of the development of CCIR. Chapter Two covers the history of CCIR in Army doctrine. The fifth section of Chapter One points out several issues in current doctrine that make CCIR ambiguous, confusing, or overly complex. It also makes the case that the doctrine needs to be revised.

Decisionmaking

CCIR contribute to Army Command through decisionmaking. Decisionmaking is defined as “the process of selecting a course of action as the one most favorable to accomplish the mission.”⁷ The Army recognizes two different methods for reaching a decision – analytical and intuitive. Analytical decisionmaking involves applying reason to systematically develop several courses of action (COAs), compare them, and select the best one for the problem at hand. It is considered to be appropriate in complex or unfamiliar situations, particularly if the decisionmaker lacks experience. The analytic method is not suitable when time is short. So, while analysis works well to plan and select a COA, it may not be appropriate when reacting to unanticipated problems. The Army analytical approach to decisionmaking is the Military Decision Making Process (MDMP).

⁷ Ibid., (2-3)

Intuitive decisionmaking emphasizes pattern recognition to rapidly assess a situation rather than comparing many possible COAs. Intuition is “the ability to understand the important aspects of a situation without evident rational thought and inference.”⁸ It requires that the decisionmaker have enough knowledge and experience to identify the important aspects of a particular problem and to recognize a suitable solution. Army C2 doctrine states that “intuitive decisionmaking does not work well when the situation includes inexperienced commanders, complex or unfamiliar situations...”⁹ It aims at “satisficing”, finding the first satisfactory solution, rather than on optimizing, as the analytical approach attempts to do.¹⁰ The Army intuitive approach to decisionmaking is the Rapid Decision Making and Synchronization Process (RDSP).¹¹

Army Decision Types

The Army recognizes that the analytical approach is more appropriate for deliberate planning prior to military action, while the intuitive approach is more appropriate for the fluid, rapidly changing environment of combat, when time and uncertainty are critical factors.¹² Doctrine makes this clear in its discussion of different decision types. After the commander decides which COA to follow, he must prepare to make subsequent decisions during the execution of the plan. These subsequent decisions exist as either *execution decisions* or *adjustment decisions*. A figure from *FM 5-0.1: The Operations Process* helps to illustrate how these decisions relate to the original plan.

⁸ Ibid., (2-5)

⁹ Ibid., (2-4)

¹⁰ “Satisfice” versus “optimize”: Herbert A. Simon, “Rational Choice and the Structure of the Environment”. *Psychological Review*, vol. 63, 1956, pp. 129-138.

¹¹ The RDSP was introduced in FMI 5-0.1 (The Operations Process), published in March of 2006.

¹² *Naval Doctrine Publication 6 - Naval Command and Control*, 1995. Retrieved from <http://www.au.af.mil/au/awc/awcgate/navy/ndp6-decisions.htm>

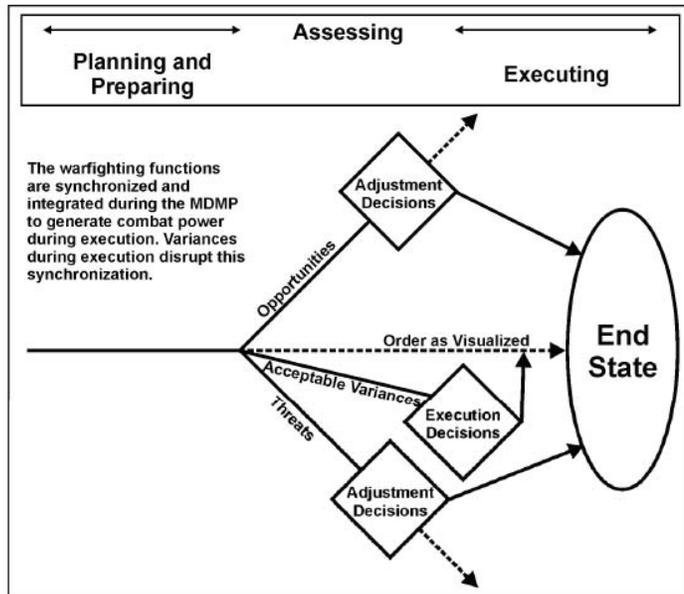


Figure 1: Decisions in Execution

An *execution decision* is “the selection, during preparation and execution, of a course of action anticipated by the order.”¹³ Commanders and plans anticipate them, as well as the specific conditions or criteria for making them. Some examples of *execution decisions* are: following a branch or sequel to the initial concept, executing a decision point, or triggering a pre-planned target. A *decision point*, probably the most recognizable example of an *execution decision*, is “an event, area, or point in the battlespace where and when the friendly commander will make a critical decision.”¹⁴ *Decision Points* are always supported by one or more CCIR, and are usually associated with some specific location – either a *named area of interest* (NAI), or a *target area of interest* (TAI).¹⁵

An *adjustment decision* is “the selection of a course of action that modifies the order to respond to unanticipated opportunities or threats. Commanders make adjustment decisions during

¹³ FM 6-0, (6-23)

¹⁴ FM 5-0 2005: *Army Planning and Orders Production*, (Washington, DC: U.S. Department of the Army, 2005), (3-46)

¹⁵ Ibid., (G-15)

preparation and execution.”¹⁶ They arise from a major change to the situation, and generally result in the commander reallocating resources, significantly changing the plan, or even changing the mission. Because *adjustment decisions* might occur with little or no warning, Army decision-making doctrine provides some guidance on how to deal with them. It says that “adjustment decisions in novel or complex situations should be as analytic as time allows... Time-constrained conditions require more intuitive decisionmaking techniques.”¹⁷ While the analytical approach is preferred, commanders are more likely to employ an intuitive or naturalistic form of decisionmaking when faced with major variances from the original plan.¹⁸ Commanders should consider a number of factors when choosing an analytical or intuitive approach to *adjustment decisions*, as shown in the following figure from *FM 6-0: Mission Command*.

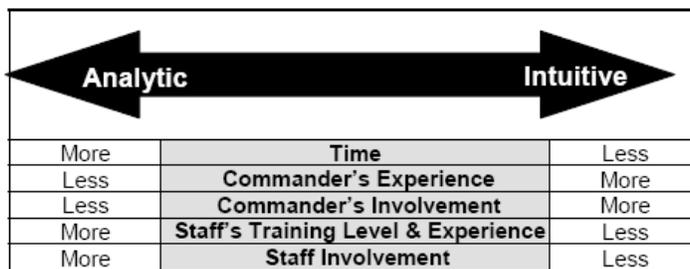


Figure 2: Adjustment Decision Methods

FM 6-0 does not provide similar guidance for how a commander should go about making *execution decisions*. Commanders or staffs anticipate *execution decisions* and select them when the right conditions appear. They are, as such, decisions which have already been made as part of the original plan – the commander is simply waiting for the right circumstances to trigger them. Some *execution decisions* are routine actions, monitored and managed by the staff, which rarely

¹⁶ *FM 6-0*, (6-27)

¹⁷ *Ibid.*, (6-29)

¹⁸ *FMI 5-0.1 2006: The Operation Process*, (Washington, DC: U.S. Dept. of the Army, 2006), (3-

require a commander's direct attention.¹⁹ *Adjustment decisions* are the ones which will require a commander's direct and immediate attention because they represent a significant departure from his *battlefield visualization*.

Visualize, Describe, Direct

Regardless of whether the commander uses an analytical or and intuitive decisionmaking technique, he does so through a *visualize-describe-direct* methodology. Army C2 doctrine describes it this way:

“The most important role commanders play in command and control (C2) is combining the art of command with the science of control. Commanders use the activities of visualizing the battlespace, describing their commander's visualization to subordinates, directing actions to achieve results, and leading the command to mission accomplishment as their decisionmaking methodology throughout the operations process. This methodology combines the art of command and the science of control.”²⁰

According to this methodology, commander's *visualize* “the force's current state with relation to the enemy and environment (situational understanding), and [develop] a desired end state that represents mission accomplishment and the key tasks that move the force from its current state to the end state (commander's intent).”²¹ In order to develop their vision of the battlefield, commanders consider the factors of Mission, Enemy, Terrain and weather, Troops and support available, Time available, and Civil considerations (METT-TC)²² to understand their situation. The commander's vision is developed through a mental exercise which relies heavily on his ability to intuitively understand a problem, imagine a solution, and recognize the critical information he will need to reach his anticipated end state.²³

¹⁹ Chapter Six of FM 6-0 lists “Conduct Continuous ISR and Target Acquisition”, “Adjust Graphic Control Measures”, and “Perform Battle Tracking” as examples of execution decisions.

²⁰ *FM 6-0*, (4-1)

²¹ *Ibid.*, (2-16)

²² *FM 5-0*, (3-4)

²³ *TRADOC Pamphlet 525-70: Battlefield Visualization Concept*, Headquarters, U. S. Army Training and Doctrine Command, Fort Monroe, Virginia, 1 October 1995

Commanders *describe* their visualization through three products – commander’s intent, planning guidance, and CCIR. The intent states the purpose of the operation as well as the key, or essential, tasks which will achieve the end state. Significantly, intent does not include a detailed plan to reach the end state. Key tasks are not tied to a specific COA – they identify what conditions must be met in order to reach the end state.²⁴ The second product, planning guidance, focuses the staff’s efforts on developing COAs. In contrast to the commander’s intent, his planning guidance may specify certain actions or even a particular COA.²⁵ The commander includes an appropriate level of detail depending on how much time is available, the proficiency of his staff, and how much latitude he is willing to give them in planning. Finally, commanders issue CCIR to “focus information collection on [Relevant Information] they need to support the commander’s visualization and make critical decisions.”²⁶ Commanders issue their intent, CCIR, and planning guidance following Mission Analysis, the second step in the Military Decision Making Process (MDMP). Planning guidance, an element of *describe*, could also be considered the first instance of direction, in that the commander is providing specific guidance about how to accomplish key tasks and achieve an end state.²⁷

Commanders *direct* throughout the planning, preparation, and execution of an operation. They can do so by issuing orders, establishing control measures, or shifting resources as necessary.²⁸ The commander can only make effective decisions if he maintains his *situational understanding* (SU), which is “the product of applying analysis and judgment... to determine the relationships among the factors of METT-TC.”²⁹ SU facilitates decisionmaking and forms the basis of the commander’s visualization. In order to maintain his SU while *directing*, the

²⁴ FM 5-0, (3-6); FM 6-0, (4-8)

²⁵ FM 5-0, (3-7); FM 6-0, (4-9)

²⁶ FM 6-0, (4-10)

²⁷ FM 5-0, (3-9)

²⁸ FM 6-0, (4-14)

²⁹ Ibid., (1-5)

commander must receive the right information at the right time. The CCIR serve this purpose by listing what information the commander will need to maintain his visualization.

Conclusion

Within the command element of decisionmaking CCIR result mainly, but not exclusively, from an intuitive process conducted by the commander. They are related to his personal visualization rather than to any specific COA.³⁰ They are not necessarily tied to specific decisions regarding the execution of a COA. Instead, they help to describe his vision to his subordinates and identify the information he will need to preserve it. In terms of decision types, commanders are more likely to focus CCIR on the information they need to make *adjustment decisions* rather than *execution decisions*. CCIR support the commander's decisionmaking because they maintain his Situational Understanding.

Information Management

CCIR contribute to Army control through *Information Management*. Control includes analytical processes for “collecting, processing, displaying, storing, and disseminating relevant information for creating the common operational picture.”³¹ Information is considered to be the “most important element of control”³². Commanders manage information to answer two fundamental questions: (1) “What is the actual situation compared with the desired end state?” and, (2) “Are adjustments to the plan necessary to reconcile the situation with the desired end state?” Information Management (IM) acquires relevant information (RI) and categorizes it in terms of the factors of METT-TC in order to create and share the common operational picture (COP).³³ The COP, based on shared data, ensures that multiple commands maintain the same vision of the battlefield. This shared COP, examined through judgment and experience, results in

³⁰ Ibid., (4-6)

³¹ Ibid., (3-1)

SU, which itself forms the basis of decisionmaking. CCIR are critical to IM because they help establish which information is actually relevant to the problem at hand.

Information Management in Army Command and Control

“Information” is not a simple concept in Army C2 doctrine. In fact, it is exceedingly complex. *FM 6-0: Mission Command* includes an entire appendix dedicated solely to information. It addresses “the cognitive hierarchy of information, relevant information categories by subject (METT-TC) and by usage, information management categories, and relevant information quality criteria.”³⁴ Since information alone is considered to have no meaning³⁵, these multiple categories are intended to help people organize it, transform it, and share it.

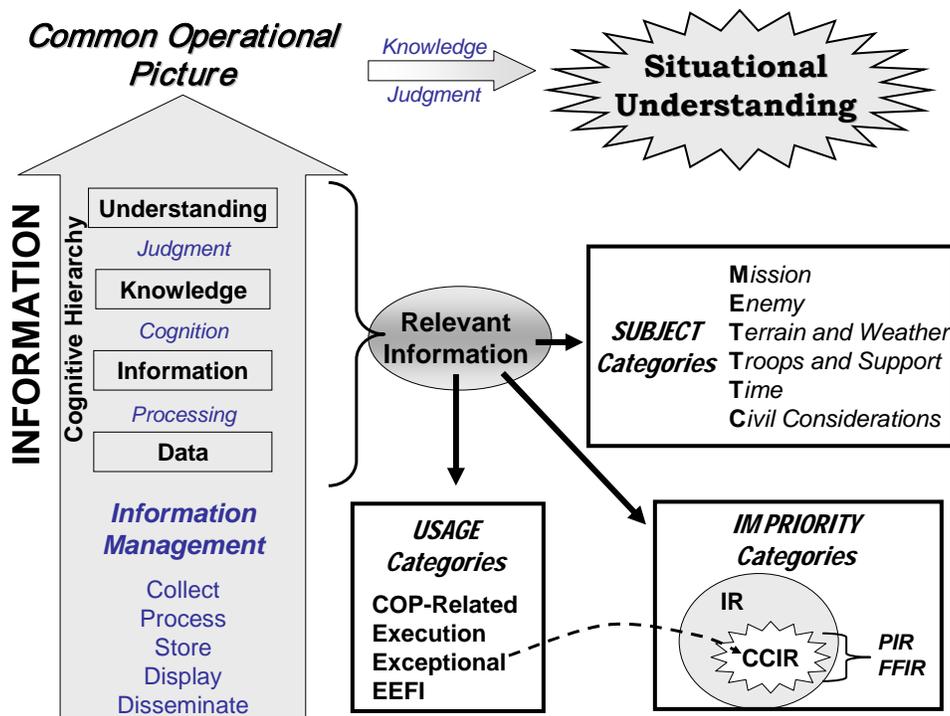


Figure 3: Information Management

³² Ibid., (B-1)

³³ Ibid., (3-3)

³⁴ Ibid., (B-1)

³⁵ Ibid., (B-1)

The cognitive hierarchy assigns four levels of meaning to information, beginning with *data*. *Data* is any kind of unprocessed information available within the C2 system, and is generally considered to be useless until it is processed into *information*. It is *information* which forms the basis for the COP.³⁶ Commanders and staffs analyze, evaluate, and integrate *information* to form *knowledge*. *Knowledge* is considered to be an information product useful for decision-making, and it also includes an appreciation for the level of uncertainty present. Finally, *understanding* “is *knowledge* that has been synthesized and had judgment applied to it in a specific situation to comprehend the situation’s inner relationships.”³⁷ The C2 system uses IM to transform raw *data* into *information*, *knowledge*, and *understanding*, so that commanders can make effective decisions.

Information Management is “the provision of relevant information to the right person at the right time in a usable form to facilitate situational understanding and decisionmaking.”³⁸ It includes five activities – collect, process, store, display, and disseminate.³⁹ It has two elements – information systems (INFOSYS) and relevant information.

Relevant Information (RI) is all information of importance to the commander and staff in the exercise of command and control. It is a commander’s most important C2 resource, exists in all levels of the cognitive hierarchy, and is integrated throughout C2.⁴⁰ In the context of IM, the six factors of METT-TC make up the major subject categories into which relevant information is grouped for military operations.⁴¹ RI can be considered to be a sub-element of all information available at any particular time – the information significant to the situation or problem at hand.

RI also exists in four categories based on how the information is used. *COP-related information* is the basis of SU and decisionmaking. It exists within the METT-TC subject

³⁶ Ibid., (B-1)

³⁷ Ibid., (B-2)

³⁸ Ibid., (1-6).

³⁹ Ibid., (1-6).

⁴⁰ Ibid., (1-5).

categories. *Execution information* is “information that directs, initiates, or regulates action, conduct, or procedure.”⁴² It communicates the commander’s decisions to his subordinates and can take form in orders or plans. *Exceptional information* is “information that would have answered one of the commander’s critical information requirements if the requirement for it had been foreseen and stated as one...”⁴³ It results from unexpected or extraordinary events, and can only be recognized by subordinates who understand the commander’s intent and share his SU. It usually reveals the need to make an *adjustment decision*, and is processed just as if it were CCIR.⁴⁴ *Essential elements of friendly information* (EEFI) are “the critical aspects of a friendly operation that, if known by the enemy, would subsequently compromise, lead to failure, or limit success of the operation.”⁴⁵ EEFI establish information which must be protected from enemy detection, not information the commander is trying to acquire.

Finally, RI is divided into two categories which establish priorities for collection and processing. These categories are considered necessary because some RI is “mission-specific and assets must be specifically tasked to collect it.”⁴⁶ The two categories are *information requirements* and *commander’s critical information requirements*. These categories help commanders focus their information collection on *mission-specific* RI which would not normally be collected through routine operations. *Information requirements* (IR) are “all information elements the commander and staff require to successfully conduct operations; that is, all elements necessary to address the factors of METT-TC.”⁴⁷ *Commander’s Critical Information Requirements* (CCIR) are “elements of information required by commanders that directly affect decisionmaking and dictate the successful execution of military operations.”⁴⁸

⁴¹ Ibid., (B-3).

⁴² Ibid., (B-12).

⁴³ Ibid., (B-12).

⁴⁴ *FMI 5-0.1*, (4-6).

⁴⁵ *FM 6-0*, (B-13)

⁴⁶ Ibid., (B-14)

⁴⁷ Ibid., (B-15)

⁴⁸ Ibid., (B-14)

CCIR “result from the analysis of IRs in the context of a mission and commander’s intent.” They are a sub-set of all IRs which have been specifically selected by the commander as necessary to support his visualization and decision-making. CCIR include two further categories of information requirements – *priority information requirements (PIR)* and *friendly forces information requirements (FFIR)*. PIR focus on the enemy, although they also address the elements of time, terrain and weather, and some civil considerations. They are “those intelligence requirements for which a commander has an anticipated and stated priority in his task of planning and decisionmaking.”⁴⁹ FFIR focus on information regarding the mission, the troops and support available, and time available. They are “information the commander and staff need about the forces available for the operation.”⁵⁰ PIR and FFIR will be addressed in greater detail in the next section.

While the commander ultimately selects which IRs become CCIR, they are initially developed through a process that includes the staff. Information Management –

“begins with questions that the commander and staff need answered to exercise C2. These questions become IRs. From the IRs, the staff recommends designating some as PIRs or FFIR. From the staff recommendations, or from his own priorities, the commander designates his CCIR. This provides a clear set of priorities for allocating resources to answer IRs. The staff allocates resources first to answer CCIR, then to PIRs and FFIR, and only then to the remaining IRs.”⁵¹

Staff officers are expected to develop IRs in their respective areas, and to recommend appropriate ones as CCIR. Refined CCIR are ultimately produced as a result of the MDMP – the Army’s deliberate, analytical approach to decisionmaking.⁵²

The commander’s initial determination of CCIR may be an intuitive act, but the actual management of information – collecting, processing, storing, displaying, and disseminating – is based on scientific and analytical processes. All of these different categories of information exist,

⁴⁹ Ibid., (B-15)

⁵⁰ Ibid., (B-15).

⁵¹ Ibid., (B-15).

⁵² *FM 5-0*, (3-43).

in large part, because Army doctrine calls for digitized *Information Systems* (INFOSYS) to do the bulk of the work. INFOSYS “directly effect... how staffs perform IM”⁵³, and are supposed to make the management of information more effective and efficient than manual methods. These efficiencies will only be possible “when commanders and their soldiers determine how to automate and process the massive amount of information required to conduct modern operations.”⁵⁴ Getting information into the INFOSYS is easy, but getting the C2 system to store it and display it in a manner suitable to building a COP is a challenge. The effort to break all information down into a comprehensive taxonomy, as will be shown in chapter two, is a direct result the Army’s move toward digitized C2 systems.

Information Management in Operations Doctrine

Information Management is not unique to Army C2 doctrine. It also appears as a significant contributor to *Information Superiority* in both *FM 3-0: Operations* and *FM 3-13: Information Operations*.⁵⁵ Information Superiority is “the operational advantage derived from the ability to collect, process, and disseminate an uninterrupted flow of information while exploiting or denying an adversary’s ability to do the same.”⁵⁶ Put simply, it is an advantage gained through control of RI, and it is achieved by synchronizing three “contributors” – Intelligence, Surveillance, and Reconnaissance (ISR); Information Management (IM); and Information Operations (IO).

Army doctrine for IM and information categories is inconsistent between C2 doctrine in *FM 6-0* and Operations doctrine in *FM 3-0*. Operations doctrine states that IM assigns information into four categories: *specified requirements*, *implied requirements*, *gaps*, and *distractions*. Within these categories, information is further classified as *facts*, *estimates*, and

⁵³ *FM 6-0*, (5-11).

⁵⁴ *Ibid.*, (5-11).

⁵⁵ *FM 3-0*, published in 2001, pre-dates *FM 6-0* by two years.

⁵⁶ *FM 3-0*, (11-2).

assumptions. All information can be either relevant information or distractions.⁵⁷ With respect to CCIR, they “directly support the commander’s vision of the battle” and “once articulated... generate two types of supporting information requirements: FFIR and PIR.”⁵⁸ This view is at odds with C2 doctrine, in which FFIR and PIR are produced from IR generated by the staff. A figure on page 11-6 of *FM 3-0*, reproduced below, shows the relationship of IM to ISR and IO, as well as the relationships of information requirements like PIR, FFIR, and even EEFI.

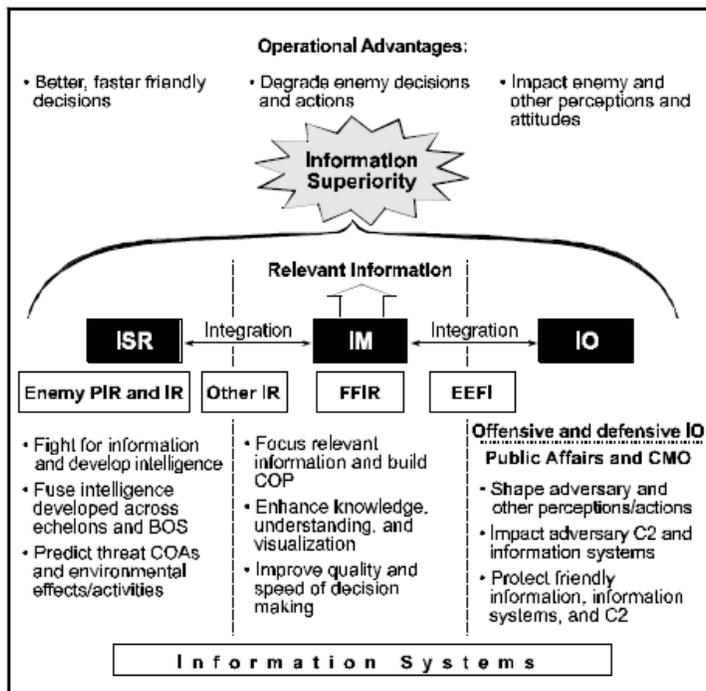


Figure 4: Information Superiority

The information categories and classifications of Operations doctrine are significantly different from those in Army C2 doctrine. There are some similarities, but Operations doctrine addresses information from a very different perspective. It creates a taxonomy of information types based on what the commander wants to know, what he needs to know, and whether he can

⁵⁷ Ibid., (11-13).

⁵⁸ Ibid., (11-14).

tell the difference.⁵⁹ Other notable differences include the relationships between CCIR and EEFI, and the method for producing PIR and FFIR.

Conclusion

Within the control element of information, CCIR result from an analytical process conducted primarily by the staff. The staff's contribution to the creation and development of CCIR occurs within the framework of the MDMP, which is an analytical process. This is not to say that everything the staff does is analytical rather than intuitive. The staff may be capable of developing CCIR which support the commander's visualization, provided they understand it, but they are more likely to develop CCIR based on their own information needs. Their needs are naturally related to their duties, which revolve around preparing plans and recommendations, assessing ongoing operations, and managing information.⁶⁰ All of these duties are highly analytical in nature and will generally result in CCIR which are very specific to a particular event or situation (like a *decision point*). As a result, the staff will tend toward developing CCIR focused on *execution decisions* rather than *adjustment decisions*. In addition, since staff-produced IR develop into PIR and FFIR before they are recommended as CCIR, the unique characteristics of these two types will generally be applied to CCIR. Finally, Army guidelines for IM and information categories is inconsistent between C2 doctrine in *FM 6-0* and Operations doctrine in *FM 3-0*.

PIR and FFIR

PIR and FFIR are the only two sub-categories of CCIR.⁶¹ PIR focus on the enemy, although they also address the elements of time, terrain and weather, and some civil

⁵⁹ For example, FM 3-0 (page 11-13) states that a "distraction" can be information that the commander wants, but does not need, to know.

⁶⁰ *FM 6-0*, (D-2 through D-8)

⁶¹ The 1997 version of FM 101-5 included EEFI as a third category. EEFI have since been removed from CCIR and are now considered to be a "usage category" of relevant information.

considerations. They are addressed in great detail in a number of different doctrinal manuals across a wide variety of military disciplines. FFIR focus on information regarding the mission, the troops and support available, and time available. They are barely mentioned in most manuals and receive only a fraction of the attention spent on PIR. The reason is clear – FFIR focus on things that the commander has a certain amount of control over. As long as communications hold up, the commander can get the answer he wants regarding his own forces. He can also be reasonably sure that the answer will be accurate, reliable, useable, and complete⁶². In fact, most FFIR would eventually be answered through routine channels whether the commander designated them or not. PIR, on the other hand, deal with elements characterized by a great deal of uncertainty. The commander cannot guarantee that PIR will be answered on time and with enough detail, or even that the answer will be reliable. Getting answers to PIR usually involves the commitment of some kind of limited resource to go and collect information, process it, and analyze it. As a result of these differences the Army has developed a number of unique rules for PIR, while it has created none whatsoever for FFIR.⁶³

Army intelligence doctrine defines PIR in great detail, infusing them with a number of special rules and characteristics to control their development and use. *FM 2-0: Intelligence* portrays the selection of PIR as a systematic process. It says that “the [intelligence officer] recommends to the commander those IRs produced during the MDMP that meet the criteria for PIR.”⁶⁴ To meet the criteria, PIR should:

- Ask only one question.
- Support a decision.
- Identify a specific fact, event, activity (or absence thereof) which can be collected.
- Indicate the latest time the information is of value (LTIOV). The LTIOV is the absolute latest time the information can be used by the commander in making the

⁶² *FM 6-0* Appendix B lists accuracy, timeliness, useability, completeness, precision, and reliability as the “relevant information quality criteria.”

⁶³ FFIR are expected to conform to the description of CCIR, but have no unique requirements.

⁶⁴ *FM 2-0 2004: Intelligence*, (Washington, DC: U.S. Department of the Army, 2004), (1-11)

decision the PIR supports. The LTIOV can be linked to time, an event, or a point in the battle or operation.⁶⁵

These criteria are important to intelligence personnel because, having asked the question, they must task an intelligence collector to go and find the answer. PIR are further broken down into *specific information requirements* (SIR) and *specific orders and requests* (SOR) in order to tell an intelligence asset exactly what to find, when and where to find it, why it is important, and how to report it.⁶⁶ This kind of specificity is generally only possible when the PIR is linked to an *execution decision* identified during planning. As explained in doctrine, PIR always “support a decision expected to occur during execution of the selected COA”⁶⁷ and should come from the intelligence requirements developed during the wargaming portion of the MDMP.⁶⁸ Therefore, PIR are developed in great detail after a long analytical process which examines a specific anticipated decision. Decisions based on unanticipated threats or opportunities could never be reduced to PIR, SIR, and SOR quickly enough to assist the commander.

*FM 34-2: Collection Management and Synchronization Planning*⁶⁹ addressed the criticism that some intelligence requirements might still be valid even though they cannot be linked to specific decision. The question, and the manual’s response, is worth reproducing here:

“ *This system of wargaming intelligence requirements will not work because there are PIR and IR that need to be answered, but which cannot be linked to a friendly action. For example, enemy use of nuclear, biological, and chemical (NBC) weapons.*’

If enemy use of NBC weapons really is important to your commander, then the staff should template and wargame out how, where, and when the enemy will use NBC weapons. They should also wargame what your command’s response or reaction will be if the enemy should use NBC weapons. For example: Will you shift main supply routes? Deploy decontamination units to previously

⁶⁵ Ibid., (1-12)

⁶⁶ *FM 3-90.3 2001: The Mounted Brigade Combat Team*, (Washington, DC: U.S. Department of the Army, 2001), (4-2)

⁶⁷ *FM 34-2 1994: Collection Management and Synchronization Planning*, (Washington, DC: U.S. Department of the Army, 1994), (2-1)

⁶⁸ Ibid., (D-1)

⁶⁹ *FM 34-2* was scheduled to be replaced by the new *FM 2-01: Intelligence Synchronization* in mid-2004, but remains the key doctrinal manual addressing the development of PIR.

identified sites? Deliver retaliatory fires? All of these require Wargaming and are indeed linked to friendly actions and decisions.”⁷⁰

Inherent to this example is the criteria that PIR must be based on some specific event which can be observed. An event or action leads to a reaction, which the staff can wargame and transform into an *execution decision*. In fact, every example of a “good” PIR in *FM 34-2* focuses on a specific enemy action during conventional military battles.⁷¹

More recently, doctrine has begun to relax its strict reliance on this view of PIR. For example, the doctrine for Stability Operations and Support Operations recognizes that “generally, in offensive and defensive operations, PIRs are answered and targets are attacked and destroyed. This may not be the case in a stability operation or support operation.”⁷² PIR do not necessarily have to focus on military capabilities and intentions – they could adjust to “the people and their cultures, politics, crime, religion, economics, and related factors,”⁷³ and might remain valid as long as the mission requires. Despite these considerations, the general understanding that PIR support specific decisions retains its power⁷⁴, and doctrine has not removed or refined any criteria for a “good” PIR.

In summary, while FFIR have no special rules, PIR have clearly defined criteria designed to support both *execution decisions* and the tasking of intelligence collection assets. Intelligence doctrine shows that PIR are selected from IRs developed during the analytical MDMP. They ask very specific questions linked directly to decisions anticipated by the plan, and they have an identifiable expiration known as the latest time information is of value (LTIOV). The

⁷⁰ *FM 34-2*, (D-2)

⁷¹ “Conventional”, in this context, means offensive or defensive operations conducted between two opposing forces employing similar organizations, weapons, and tactics. More specifically, it refers to the kind of mass, mechanized warfare anticipated by the Army’s AirLand Battle doctrine. AirLand Battle doctrine is discussed in Chapter Two.

⁷² *ST 2-91.1 2004: Intelligence Support to Stability Operations and Support Operations*, (Washington, DC: U.S. Department of the Army, 2002), (2-2)

⁷³ *FM 3-07 2003: Stability Operations and Support Operations*, (Washington, DC: U.S. Department of the Army, 2003), (2-5)

commander has the authority to establish any PIR he wants, but most PIR recommended by his staff will meet these criteria.

The Purpose(s) of CCIR

Army doctrine defines CCIR as “elements of information required by commanders that directly affect decisionmaking and dictate the successful execution of military operations.”⁷⁵ This definition is broad and vague, and only hints at the practical purposes CCIR should serve in support of the commander’s decisionmaking. The purposes of CCIR are rarely stated explicitly, but there are a surprising number of intended results or effects suggested in doctrine. They are implied with statements like “prudent selection of and attention to the commander’s critical information requirements (CCIR) *facilitate integrating information.*”⁷⁶

FM 6-0 alone lists over 15 different purposes of CCIR, including “maintain accurate situational understanding”, “avoid information overload”, “allocate resources”, “guide unity of effort”, and “select a COA”. A broad variety of other purposes are listed in other manuals, including “convert an assumption into a fact” and “drive decisions at a decision point”⁷⁷; “confirm the commander’s vision of the fight” and “focus coordination”⁷⁸; and “focus assessment efforts”⁷⁹. These purposes may not remain the same during all phases of an operation. The most recent doctrinal manual to address CCIR notes that “during planning, CCIRs often focus on information needed to determine which COA to choose. During preparation and execution, CCIRs focus on information needed to validate the selected COA or determine when to initiate

⁷⁴ As an example, see “The S2 at the Decisive Point” by LTC David L. Ward and MAJ Frank Tank, published in CALL CTC Bulletin 06-3 at <https://call2.army.mil/products/ctc-bulletins/asp/06-3/ch-1.asp>

⁷⁵ *FM 3-07*, (B-14)

⁷⁶ *Ibid.*, (2-9)

⁷⁷ *FM 5-0*

⁷⁸ *FM 3-0 2001: Mission Command: Command and Control of Army Forces*, (Washington, DC: U.S. Department of the Army, 2001)

⁷⁹ *FM 3-13 2003: Information Operations: Doctrine, Tactics, Techniques, and Procedures*, (Washington, DC: U.S. Department of the Army, 2003)

critical events, such as a branch or sequel.”⁸⁰ Clearly, no single CCIR could possibly accomplish all of these purposes.

Doctrine gives such a wide variety of reasons for using CCIR that the concept seems unfocused, giving the commander no true criteria to assess their utility. While broad guidance allows commanders significant latitude to establish their CCIR, it does not necessarily help them understand, in advance, whether a particular CCIR is useful in any particular situation. Baseline manuals like *FM 3-0*, *FM 5-0*, and *FM 6-0* devote considerable time to defining CCIR and describing their characteristics, but most Army manuals which deal with unique operating environments tend to ignore them. For example, the doctrine for Urban Operations⁸¹ barely mentions CCIR and the new Counterinsurgency manual⁸² fails to describe them at all. Doctrine for Stability Operations⁸³ also ignores CCIR, although it does briefly address PIR. Doctrine for Civil Disturbance Operations⁸⁴ makes no reference to CCIR or PIR. The resulting impression is that Army doctrine presents CCIR as a sort of information panacea, capable of solving multiple problems, but that it completely fails to demonstrate how to apply the concept in practice.

The lack of more specific purposes for CCIR is all the more surprising considering the central role they play in Army decisionmaking processes. CCIR are described as one of three “most important” control measures used as criteria for making decisions.⁸⁵ They are the key to effective IM, essential to successful operations, and are inextricably linked to the commander’s visualization. If the commander’s information requirements are as important as doctrine makes them out to be, then doctrine should summarize their intended results in a few explicit purposes.

⁸⁰ *FMI 5-0.1*

⁸¹ *FM 3-06 2005: Urban Operations*, (Washington, DC: U.S. Department of the Army, 2005)

⁸² *FM 3-24 2006: Counterinsurgency Operations*, (Washington, DC: U.S. Department of the Army, 2006)

⁸³ *FM 3-07 2003: Stability Operations and Support Operations*, (Washington, DC: U.S. Department of the Army, 2003)

⁸⁴ *FM 3-19.15 2005: Civil Disturbance Operations*, (Washington, DC: U.S. Department of the Army, 2005)

⁸⁵ *FM 5-0.1*, (4-5)

If the intended results of “good” CCIR can not be summarized in a few explicit purposes, then doctrine has failed to justify their central role.

In order to simplify further discussion, this monograph summarizes all the doctrinal results of CCIR into four broad purposes. CCIR manage information, maintain situational understanding, support decision points, and support assessment. These purposes represent the main reasons commanders and staffs generate CCIR according to current doctrine, and are also supported by a historical review of the development of CCIR in doctrine. These purposes will be re-examined in the conclusion to this monograph.

Issues Regarding CCIR in Army Doctrine

The concept of CCIR in Army doctrine is often confusing and contradictory. The purpose of this section is simply to point out several issues in current doctrine which make the concept of CCIR ambiguous, confusing, or overly complex. There are four main issues addressed here. First, the Army’s use of the term “information” is so inconsistent that the word has no clear meaning. Second, the many different categories of “information” are confusing and unhelpful. Third, doctrine describes two contradictory methods for the development of CCIR. Finally, recent operations in stability operations and COIN have resulted in tactics, techniques, and procedures (TTPs) for CCIR which are at odds with existing doctrine.

The Definition of Information

The Army’s use of the term “information” is so inconsistent that the term has no clear meaning. Appendix B of *FM 6-0*, which covers Information, is riddled with conflicting or contradictory descriptions. As an example, the opening paragraph states that “information alone has no meaning”, but the next paragraph begins by claiming that “*Information*, in the general sense, is the meaning humans assign to data.” It goes on to assign four different levels of meaning to information within the cognitive hierarchy, one of which is itself *information*.

Additionally, Appendix B distinguishes intelligence from information, but then acknowledges that intelligence becomes *relevant information* within the meaning levels of *information* and *knowledge*. It argues that intelligence only enters the cognitive hierarchy after it has passed through the intelligence cycle. The intelligence cycle itself is defined as “the process by which information is converted into intelligence”⁸⁶ and shares several elements with the IM activities.⁸⁷ The end result of all these inconsistencies is that there is no single definition of the term *information* in Army doctrine. It could be data which has yet to be processed into intelligence, it could be intelligence which has been transitioned into knowledge, it could be an element of control, or even an “element of combat power.”⁸⁸

The Categories of Information

The many different categories of information are inconsistent, confusing, and unhelpful. The most obvious example would be the significant differences between IM in C2 doctrine and in Operations doctrine. *FM 6-0* includes the cognitive hierarchy of information, relevant information categories by subject (METT-TC) and by usage, information management categories, and relevant information quality criteria. *FM 3-0* includes four categories: specified requirements, implied requirements, gaps, and distractions. Within these categories, information is further classified as facts, estimates, and assumptions. The two manuals approach information and information requirements from completely different perspectives. However, even internal to C2 doctrine, there are several cases of a confusing and unhelpful taxonomy. Some examples include the following:

⁸⁶ *FM 1-02 2004: Operational Terms and Graphics*, (Washington, DC: U.S. Department of the Army, 2004), (1-101)

⁸⁷ The Intelligence Cycle includes Plan and Direct, Collect, Process, Analyze and Produce, and Disseminate. Information Management includes: Collect, Process, Store, Display, and Disseminate. According to *FM 6-0* (Mission Command), the Intelligence Cycle performs the same function within the intelligence BOS as Information Management does within C2.

⁸⁸ *FM 3-13*, (iii)

The definition of information requirements (IR) as “all elements necessary to address the factors of METT-TC” gives them the same characteristics of relevant information (RI). IR are supposed to be a sub-set of RI based on mission-specific requirements, but the distinction seems superfluous. Army doctrine itself points this out when it says “the joint definition of information requirements (IRs) includes only intelligence requirements; the Army definition encompasses all RI.” To make matters worse, it goes on to say that “a headquarters must focus IRs on RI. Commanders do this through designating CCIR.”⁸⁹ If IR are equivalent to RI, why should a staff worry about “focusing” them on RI? If CCIR are the highest priority of all information requirements, how can they serve to focus the rest? The tendency to define all different categories by their relationships to each other creates complex, inter-connected hierarchies of information that do not relate to how information is actually handled.

Two other examples of this tendency are the definitions of *Exceptional Information* and Essential Elements of Friendly Information (EEFI). Both of these categories are constantly compared to CCIR, yet exist in a different hierarchy. *Exceptional Information* is “information that would have answered one of the commander’s critical information requirements if the requirement for it had been foreseen and stated.”⁹⁰ Despite the fact that it was not initially identified as critical to decisionmaking, *exceptional information* represents a significant departure from the commander’s visualization and should be handled just like CCIR. EEFI are neither IRs nor part of the CCIR, but when the commander designates them they have a “priority on a level with CCIR.”⁹¹ Defining *exceptional information* and EEFI with respect to priority (like CCIR) while categorizing them with respect to usage (like *Execution Information*) is unnecessarily confusing.

⁸⁹ *FM 6-0*, (B-15)

⁹⁰ *Ibid.*, (B-12)

⁹¹ *Ibid.*, (B-13)

A related issue has to do with the relationships between CCIR and its two sub-categories. CCIR include PIR and FFIR, but not all CCIR must be PIR or FFIR. *FM 6-0* makes it clear that some CCIR exist outside these categories, and that they take precedence over all other information requirements. To complicate matters, there are some PIR and FFIR which are not CCIR. This distinction is shown clearly in Figure B-2 of *FM 6-0* (reproduced below). The figure suggests that RI is prioritized into three categories (CCIR, PIR/FFIR, and IR), rather than the two defined in the text. A more recent manual, *FMI 5-0.1: The Operations Process*, actually states this explicitly when it says that “the commander and staff prioritize information requirements as CCIRs, priority intelligence requirements, and remaining intelligence requirements.”⁹² This view is completely at odds with the general understanding that all CCIR are either PIR or FFIR.

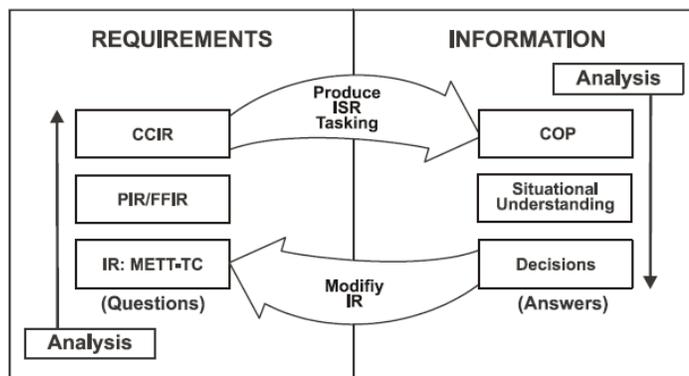


Figure 5: Relevant Information Production and Flow

The Development of CCIR

Doctrine describes two contradictory methods for the development of CCIR. On one hand, the commander alone has the responsibility to develop his CCIR as a means of communicating his intent to his staff. This corresponds to an intuitive approach to decisionmaking which assumes that the commander has the experience and understanding to arrive at an acceptable solution on his own. On the other hand, CCIR result from staff processes

⁹² *FMI 5-0.1*, (3-10)

which identify and analyze IRs “in the context of the mission and commander’s intent.”⁹³ This corresponds to an analytical approach which relies on the staff to systematically examine a problem and select the best COA to deal with it. These two approaches result in CCIR designed for very different purposes.

As a key component of decisionmaking, CCIR belong to the commander alone⁹⁴ and help to describe his visualization to subordinates. In this regard, CCIR are not linked to any particular course of action, but rather to the commander’s intent issued before the staff even begins to develop COAs. The commander is more likely to develop CCIR to maintain situational understanding or to support assessment, because these purposes help him to recognize unexpected events which might require an adjustment from the developed plan.

As a component of information management, the staff develops IRs during planning. IRs progress into PIR and FFIR, and can then be selected by the commander as CCIR. From this perspective, CCIR are inextricably linked to a specific decision within a planned COA. The staff is more likely to develop CCIR to manage information or support decision points, because these purposes help them to control the execution of a developed plan.

Recent TTPs for CCIR

During the last several years, going back at least to operations in Bosnia, intelligence officers have been developing new tactics, techniques, and procedures (TTPs) for developing PIR. These TTPs include the development of multiple lists or types of PIR such as “enduring”, “steady-state”, “standing”, “mission-specific”, or “situational”.⁹⁵ There is no doctrinal basis for developing multiple lists of PIR, but they do take into account the different purposes of CCIR.

⁹³ *FM 5-0*, (3-7)

⁹⁴ *FM 6-0*, (B-14)

⁹⁵ See Chuck Shaver, “Understanding the Commander’s Critical Information Requirements”, *A Common Perspective* Volume 14 Number 1, May 2006, page 7; and LTC Joseph A. Nelson, “Do ‘Steady State’ PIRs Work In Stability Operations and Support Operations? – Answering the Commander’s

During long-term missions like COIN or Peace Enforcement, commanders must make decisions related to both their end-state and day-to-day operations. Standing PIR relate to the commander's desired end-state and serve to maintain his situational understanding and to assess the success of his operations. This type of PIR can continuously monitor the battlefield environment simply to verify that initial staff estimates still apply. They are continuously reviewed for relevance, but are expected to remain valid for as long as the mission continues.

Short-term missions like raids or cordon operations generate temporary PIR. These PIR have established start and stop times and serve to trigger decisions anticipated by the plan. They also prioritize tasks for intelligence collection associated with that specific mission. These requirements, specific to a particular mission and with limited duration, serve a different purpose than long-term PIR. They generally serve to manage temporary information needs and to support decision points.

There are some valid arguments that multiple types, or lists, are confusing and that they actually defeat the purpose of PIR. In fact, an early draft of *FM 2-01: Intelligence Synchronization*, included the following statement: "The commander has only one set of PIR active at one time. Establishing separate PIR for force protection, combat assessment, or any other type of category creates confusion and dilutes the importance of the PIR overall."⁹⁶ Despite this view, however, units continue to develop multiple lists because the TTP works in unconventional environments. Several units operating in Iraq currently maintain separate lists of CCIR. One Divisional command has developed three different types – “campaign”, “operational”, and “standing”.

Some of these PIR, particularly the standing ones, fail to meet the criteria established in doctrine. Rather than ask specific questions they focus on status changes in areas like

Intelligence and Decisionmaking Needs”, *Military Intelligence Professional Bulletin* Volume 30 Number 3, July-September 2004, page 42.

infrastructure and security, or they seek information on changes to enemy tactics. Some ask “how” questions that cannot be linked to a specific decision point. The lists also tend to include far more than the maximum of ten CCIR recommended by doctrine.

By creating and following these TTPs, intelligence analysts have demonstrated that information requirements in COIN are significantly different from the conventional battles that Army doctrine was created to deal with. This TTP is an example of adaptation due to an insufficient doctrine, and suggests that different types of operations may stress different purposes for CCIR.

Conclusion

This section has pointed out several issues in current doctrine which make the concept of CCIR ambiguous, confusing, or overly complex. The true effect that these issues have on CCIR is open to a considerable amount of debate. Every commander has the freedom to develop his own methods to manage information requirements, regardless of what the doctrine might say. Doctrine establishes a common set of terms and guidelines which provide practical options for accomplishing missions. As such, doctrine should not be expected to cover every topic in great detail. However, in the case of CCIR, current doctrine has so many inconsistencies and contradictions that commanders are effectively ignoring it to create their own practices. Some of these practices directly contradict doctrinal guidance in almost every way.⁹⁷ Others demonstrate that there are significant differences in CCIR depending on the purpose for which they are created, and the method by which they are developed. Considering the central role CCIR play in the commander’s decisionmaking process, this development should signal the need for greater clarity.

⁹⁶ The draft of *FM 2-01* is awaiting the approval of a new *FM 3-0*. It has not yet been released. This statement is not official doctrine and may not appear in the final version.

Summary

CCIR are central to Army C2 doctrine for both decisionmaking and information management. The doctrine fails to clearly define the purposes of CCIR or to explain how they should be developed. With respect to decisionmaking, CCIR result from the commander's intuitive understanding of his problem, and are likely to be focused on *adjustment decisions*. With respect to information management, CCIR result from an analytical staff process and are likely to be focused on *execution decisions*. The doctrine is unclear whether the two sub-categories of critical information requirements – PIR and FFIR – become CCIR or are a result of CCIR. CCIR exist within a system of complex information hierarchies interrelated by their definitions, use, and purposes.

As noted by Brigadier General (Ret.) Huba Wass de Czege, “doctrine... must be expressed in clear, unambiguous language. Broad generalizations are less useful than clear nuanced definitions.”⁹⁸ Doctrine should “avoid redundancy, as words used too frequently become trite and fail to convey meaning. Sometimes new terms are introduced with a broad definition but then enter usage in a more narrow sense, thus losing their original meaning. Periodic doctrinal revisions need to address problematic language and taxonomy.”⁹⁹ The doctrine for CCIR needs to be re-examined and corrected.

Chapter Two: The Development of CCIR in US Army Doctrine

The purpose of this chapter is to shed light on the underlying purposes and theories which have influenced doctrine for CCIR. This review will focus not only on official Department of the Army publications, but also on related books, studies, and articles which have formed the basis

⁹⁷ At the time of writing, most of the Multi-National Forces-Iraq (MNF-I) CCIR fail to meet the criteria established by doctrine. MNF-I has far too many CCIR, they are not all focused on predictable events, and they are not necessarily “time-sensitive”.

⁹⁸ Huba Wass de Czege, “Lessons from the Past: Making the Army’s Doctrine ‘Right Enough’ Today”, *Landpower Essay No. 06-2*, (September 2006): 14. Retrieved from: http://www.ausa.org/pdfdocs/LPE06_2.pdf.

⁹⁹ Ibid.

for doctrine. Many of the authors referenced here were instructors assigned to the Army Command and General Staff College (CGSC) at Fort Leavenworth, Kansas. Their works often reflected current or emerging thought within the Army.

A historical review of the development of CCIR in doctrine reveals that they have always been expected to accomplish three distinct purposes – to maintain situational understanding, to support decision points, and to manage information. A fourth purpose – to support assessment – is a relatively new addition to doctrine. These purposes were all developed with conventional warfare in mind. In fact, lessons learned from unconventional wars against insurgents or guerrillas were rarely applied to the concept of CCIR, and were systematically removed from doctrine when they did appear.

Running through this history is a constant theme related to the uncertainty inherent in war – the ongoing “capabilities” versus “intentions” debate. Those who argue that intelligence officers must only report the enemy’s *capabilities* in a given situation tend to be those who have accepted uncertainty as a constant aspect of the battlefield. Those who argue for determining the enemy’s *intentions* tend to be those who believe that modern technologies and methods can reduce uncertainty to a level which allows an analyst to conclude the enemy’s actual plan. The capabilities school of thought tends to develop long lists of general information requirements, and to describe the enemy only in terms of effects on a friendly course of action. The intentions school of thought tends towards shorter lists of very specific information requirements to confirm or deny an enemy course of action, and to describe the enemy in terms of “most likely” goals or objectives.

Commander’s Critical Information Requirements (CCIR) developed in Army doctrine during three distinct periods. The first period began during the First World War and continued through the development of AirLand Battle doctrine following the Vietnam War. The second period began in 1984 when the Vice Chief of Staff of the Army directed the Combined Arms Combat Development Activity (CACDA) at Fort Leavenworth to “identify the minimum

essential information requirements a commander needs for his decision making processes.”¹⁰⁰

The third period began in 1989 with the publication of a RAND corporation study titled “Understanding Commander’s Information Needs” and continued through 2003 with the publication of *Field Manual 6-0: Mission Command: Command and Control of Army Forces*. Each of these periods contributed to the current doctrine for CCIR.

World War I through the AirLand Battle Doctrine

The first period of development for CCIR began during World War I and continued through the development of AirLand Battle doctrine in 1982. During this period Army doctrine began to develop terms and practices for specifying the information required by commanders. The effort focused almost exclusively on information about the enemy – considered to be the most variable, complex, and important element of the commander’s tactical problem – and produced a category of information known as Essential Elements of Information (EEI). By the time the Army adopted AirLand Battle doctrine in 1982, the concept of EEI had become synonymous with lengthy lists of data for all types of operations and environments. The transition to Priority Intelligence Requirements (PIR) marked an attempt to restrict the purpose to a single narrowly defined role – supporting decision points. CCIR appeared later, but it was during this period that the Army developed many of the unique rules for PIR, an important sub-category of CCIR. Throughout this period, the study of information requirements was based almost entirely on a conventional view of warfare.

A New Weapon in War – Post World War I

LTC Walter C. Sweeney served in a variety of Military Intelligence positions during WWI, and also as the Chief of Staff of the 28th Infantry Division during the Meuse-Argonne

¹⁰⁰ Sharon Riedel, “Commander’s Critical Information Requirements Survey: Results (Updated Report)”, US Army Research Institute (December 1984): 1.

offensive. Following the war, in 1924, he published *Military Intelligence: A New Weapon in War*. In it he described the development of Military Intelligence (MI), its purpose, and its functions. He argued that MI was absolutely necessary because technological advances had made the collection and management of information even more difficult and critical than before. He introduced an issue that would dominate the discussion of CCIR over 60 years later – information management. Noting that commanders were devoting more time and energy to the management of information than to command duties, he said:

“The successful plan of campaign always has been and always will be based upon knowledge of the strength, situation, plans and intentions of the enemy. What is new, however, is that in recent years there has been such an increase in the amount of information of the enemy to be gathered, and so many changes in the means and methods of collecting and utilizing it, as to make necessary the creation of an entirely new organization or system to keep track of it.”¹⁰¹

Sweeney also discussed different types of information and the importance of distinguishing the value of information by determining whether it should be transmitted immediately, routinely, or “held for periodical transmission.”¹⁰² His discussion of information had a lasting impact on doctrine, reflected by the fact that the Army retains categories of information based on relevance and timeliness.

One of the central arguments in *Military Intelligence: A New Weapon in War* is that the commander’s tactical problem includes three components – the mission, the enemy situation, and the friendly situation – and that the commander makes a decision only after careful consideration of these components.¹⁰³ This concept led, eventually, to today’s METT-TC (Mission, Enemy, Terrain and weather, Troops and support available, Time available, and Civil considerations). He also believed that modern warfare had introduced so much complexity that the commander needed a staff to assist him.

¹⁰¹ Walter Campbell Sweeney, *Military Intelligence: A New Weapon in War*, (New York: F.A. Stokes, 9942), 1.

¹⁰² Sweeney, 190.

¹⁰³ Sweeney, 28.

LTC Sweeney unintentionally began a debate, which continues today, with his focus on identifying the plans and intentions of the enemy. Other authors have argued that it is foolish to attempt to identify an enemy's *intentions*, and that intelligence officers should instead focus their efforts on identifying enemy's *capabilities*. Sweeney clearly believed that it was possible to estimate the probable plans and intentions of the enemy, although he qualified his position by stating that no one can determine precisely what the enemy will do. This view was built on his understanding of the nature of modern warfare.

Based on his experiences in World War I, Sweeney believed that future wars would result in "the participation of such huge armies as to make inevitable the establishment of long lines of battle with flanks resting on impassable objects or so widely separated as to render turning movements or extensive maneuvers impracticable."¹⁰⁴ He believed that warfare would always be stabilized along a front between opposing armies, similar to the trench warfare he had experienced during the Meuse-Argonne offensive. He envisioned offensive firepower so great that defenders would be required to construct fortifications just to survive and retain terrain. Maneuver warfare would be the exception, rather than the rule.

Sweeney concluded that warfare had become so much more complicated and dangerous that commanders could not risk action without a superior understanding of the situation. Identifying the enemy's capabilities would be simple – technological innovation and the proximity of armies would make it practically impossible for an enemy to hide his forces or conceal his strength. Identifying the enemy's plans and intentions would be difficult, however, and intelligence would have to focus on this aspect if commanders ever hoped to prevail.

LTC Sweeney clearly did not believe that it was possible for an intelligence officer to divine the actual enemy course of action in any particular situation. He saw the collision of friendly and enemy forces on a particular piece of terrain as an event too complex to forecast, and

¹⁰⁴ Sweeney, 11.

warned intelligence officers to avoid “prophesying”. He believed that it was the responsibility of the intelligence officer to estimate the likely intentions of the enemy, but he warned that “such estimates, however, are based upon probabilities and are so recognized.”¹⁰⁵ He encouraged the use of terms like “probable enemy plans and intentions” to communicate the results of professional analysis.

In 1926, two years after LTC Sweeney published *Military Intelligence: A New Weapon in War*, the War Department updated *Training Regulation 210-5: Combat Intelligence Regulations*. Echoing LTC Sweeney’s interest in enemy *intentions*, it stated that “the facts concerning the enemy are of little value to the commander unless the intentions of the enemy have been determined.”¹⁰⁶ It also specified two classes of information – general information and decisive elements. General information included all types of reports regarding enemy location, strength, operations, etc. Decisive elements were those specific reports or elements “more important to the commander than other enemy information.”¹⁰⁷ The regulation went on to state that “the commander can never hope to collect all of the enemy information which he desires. Hence, it is necessary for the commander to determine the decisive elements and to instruct his intelligence personnel to secure that information. There are no rules for determining the decisive elements.”¹⁰⁸ The “decisive elements” described in *TR 210-5* had a clear relationship to our current concept of CCIR, although the term disappeared shortly thereafter.

If nothing else, *Military Intelligence: A New Weapon in War* is a reminder that little has changed in our perception of warfare in the last 100 years. Despite the introduction of technology far beyond Sweeney’s imagination, many of his observations could be placed directly into a modern discussion of battle and the function of intelligence. Unfortunately, he poured all of his

¹⁰⁵ Sweeney, 170.

¹⁰⁶ Sweeney, 10.

¹⁰⁷ *TR 210-5 1926: Military Intelligence - Combat Intelligence Regulations*, (Washington, DC: War Department, 1926), 3.

¹⁰⁸ *Ibid.*, 4.

efforts into describing intelligence in support of his concept of stabilized warfare, and did not incorporate any of his other experiences. Despite having served in the Philippines in 1900 and 1901, and later in the Moro campaigns, Sweeney made absolutely no mention of his time conducting counterinsurgency operations. He set a precedent that seems to have held true through the entire history of intelligence requirements – every step in the development of CCIR has been based on experiences in high-intensity, conventional combat. Experiences or lessons-learned from low-intensity and counterinsurgency operations have not informed our current understanding of CCIR.

Sweeney focused on decisions regarding war plans, not decisions made during the implementation of a plan. He was concerned with selecting an initial course of action, and never mentioned anything resembling *execution decisions* or *adjustment decisions*. He discussed a number of concepts which remain in doctrine today – the elements of the commander’s tactical problem, the requirement to manage information, and different categories of information. He also initiated a debate which continues today with his emphasis on identifying the enemy’s probable intentions. It is important to note that LTC Sweeney’s use of the word “intentions” was not meant to refer to specific enemy courses of action. Instead, he seemed to be describing the enemy’s objectives or desired endstate. Regardless, Sweeney’s focus on enemy intentions drew considerable criticism, particularly from MAJ Edwin E. Schwien, an instructor at the Army Command and General Staff School from 1932 to 1936.

Combat Intelligence – Pre World War II

MAJ Edwin Schwein published his own book on intelligence in 1936, twelve years after *Military Intelligence: A New Weapon in War* and only three years before the start of World War II. His work, *Combat Intelligence: Its Acquisition and Transmission*, proved to be one of the most influential books in the history of U.S. military intelligence. In his introduction, Schwein stated his two primary purposes. First was “eradicating from our teachings such pernicious and

fallacious phrases as ‘probable enemy mission’, ‘probable enemy intentions’, [and] ‘most probable enemy action’.” The second was to demonstrate “the absolute necessity for a logical systematic search for essential information.”¹⁰⁹ He succeeded in accomplishing both, although enemy intentions were reinstated into Army doctrine 40 years later with General William DePuy’s 1976 edition of *FM 100-5: Operations*.

Combat Intelligence: Its Acquisition and Transmission reads very much like a textbook, and is presented in a clear and straightforward manner. Developed from MAJ Schwien’s classroom instruction at the Command and General Staff School, it formed the basis for the 1935 revision of the Combat Intelligence Regulations. He made clear arguments and backed them up with relevant historical examples. Unfortunately, his examples were all drawn from WWI and described similar operations. Where LTC Sweeney focused on stabilized warfare, MAJ Schwien focused exclusively on maneuver warfare. Schwien actually made a subtle jab at Sweeney when he criticized U.S. attacks during the Meuse-Argonne offensive, arguing that they were often focused on terrain rather than enemy. LTC Sweeney was Chief of Staff of the 28th Division during that offensive.

MAJ Schwien opened his book with an argument almost identical to LTC Sweeney’s – that the commander’s decision is the focus of the staff’s efforts. He stated “we all know that the principal role of the commander is to make decisions. These decisions are the result of a comprehension of the situation. Information of the enemy forms the base for all intelligent decisions. It is by far the most important factor in the commander’s decision.”¹¹⁰ He also had a similar understanding of the commander’s tactical problem, although he added a fourth element. He said “there are always four factors to be considered, none of which is ever identical with those found in a previous situation or problem. These factors are Mission, Own Capabilities, Enemy

¹⁰⁹ Edwin Eugene Schwien, *Combat Intelligence: Its Acquisition and Transmission*, (Washington, D.C.: Infantry Journal, 1936), vi.

¹¹⁰ Schwien, vi.

Capabilities, and Terrain.”¹¹¹ By including terrain, Schwien moved one step closer to the current description of METT-TC as the primary categories of Relevant Information.

He continually attacked the idea that commanders should consider enemy intentions when making a decision. He said “our former post-war intelligence doctrine... sacrificed the consideration of certain, although perhaps vague, enemy capabilities to the deceiving search for precision... Everything was predicated on the ability to determine the enemy’s ‘mission and intentions.’”¹¹² Schwien believed that commanders had fallen into the bad habit of making decisions based on guesses regarding enemy intentions. He argued that guesses were no longer necessary because modern technology – particularly aviation – would reduce the “void of the battlefield.” Criticizing any attempt to divine enemy actions or intentions through a “horoscope” or “black magic”,¹¹³ he said:

“to have the presumption to ‘recognize the situation as it presents itself, enveloped in fog and uncertainty, to judge sanely what one sees and to divine what one does not see’ is pure nonsense. Any commander who is addicted to this process and who has arrived at a conclusion as to what he considers ‘enemy probable intentions’ will interpret all subsequent enemy information in such a way as to reinforce his preconceived ideas.”¹¹⁴

Referring to von Moltke the Elder¹¹⁵ as the “great apostle” of this school of thought, Schwein argued that it was foolish to try to divine the intentions of the enemy commander based on the current situation. He provided a historical example from WWI to demonstrate his point. His example focused on a German commander who had changed his *intentions* four times in a 24 hour period. In his example, the German commander made decisions regarding the timing and manner of his maneuver, but did not change the objective of his maneuver. In contradistinction to LTC Sweeney, MAJ Schwien related *intentions* to a specific course of action.

¹¹¹ Schwien, 1.

¹¹² Schwien, 10.

¹¹³ Schwien, v.

¹¹⁴ Schwien, 13.

¹¹⁵ Helmuth von Moltke the Elder (October 26, 1800 to April 24, 1891) was a German Field Marshall widely regarded as one of the great strategists of the latter half of the 1800s.

He argued that a commander must base his own decisions on what the enemy *can* do – the enemy’s capabilities – and that a prioritized list of these capabilities, “formulated in the form of interrogations, become the so-called essential elements of enemy information [EEEE].”¹¹⁶ He went on to describe EEEI as “designated by the commander in order to focus the activities of the intelligence agencies on those items of information which he, the commander, needs to carry out his decision (already made) or to complete his plans, or to arrive at a decision for the next phase of the operations.”¹¹⁷ He made little attempt to describe rules for their creation or to specify their characteristics.

Schwien succeeded in removing enemy intentions from doctrinal discussions. Prior to his time at CGSC, Army doctrine had included determining the enemy’s probable intentions as a primary function of the intelligence officer. But in 1940, four years after *Combat Intelligence: Its Acquisition and Transmission*, a revised Staff Officer’s manual changed the function to keeping the commander informed of the “enemy’s situation and capabilities.”¹¹⁸ In addition, the 1941 *Operations* manual included the following statement: “in considering the enemy’s possible lines of action, the commander must guard against the unwarranted belief that he has discovered the enemy’s intentions...”¹¹⁹ The first *Field Manual 30-5: Combat Intelligence*, published in 1940, retained Schwien’s factors impacting the commander’s decision, but replaced EEEI with Essential Elements of Information (EEI). It defined the purpose of intelligence as to “reduce...uncertainties regarding the enemy and local conditions and thus assist the commander in making a decision.”¹²⁰ It stated that “the [EEI] consist of that information of the enemy, of the terrain not under our control, or of meteorological conditions in territory held by the enemy which a commander needs to make a sound decision, conduct a maneuver, avoid surprise, or formulate

¹¹⁶ Schwien, 46.

¹¹⁷ Ibid, 47.

¹¹⁸ *FM 101-5 1940: Staff Officer’s Field Manual*, (Washington, DC: U.S. Government Printing Office, 1940), 14.

¹¹⁹ *FM 100-5 1941: Operations*, (Washington, DC: U.S. Government Printing Office, 1941), 26.

details of a plan of operations.”¹²¹ The following year, EEI were included in a revised *Operations* manual with an almost identical definition. The new manual did add that EEI consisted of information the commander needs “in a particular situation”. Thus, as the Army prepared to enter the Second World War, it included information requirements as part of its command and control doctrine for the first time.

Schwien’s focus on rapid maneuver warfare and on enemy capabilities – rather than intentions – leads to the conclusion that EEIs were designed to support specific decision points and to confirm or deny enemy courses of action. His discussion of decisions included more than simply selecting an initial COA – he also considered decisions made during the implementation of a plan. In this regard he recognized the need for what current doctrine refers to as *execution* and *adjustment* decisions. Some of his EEI examples were clearly analogous to today’s PIR, supporting a specific decision point.¹²² *Combat Intelligence: Its Acquisition and Transmission* also included an early example of an intelligence collection matrix; provided formats for intelligence estimates, summaries, and reports; and established the necessity of a well-trained intelligence corps. Schwein equated enemy intentions with specific courses of action, not necessarily enemy objectives. He agreed with LTC Sweeney in one matter, however. He believed that modern technology would give commanders greater clarity regarding all aspects of the battlefield.

Intelligence is for Commanders – Post World War II

“The G2 of one Corps expressed the opinion of more than one intelligence officer (and more than one commander) when he reported “It has always been my observation that EEI are in general considered essential for a field order, and are thereafter completely ignored. Never yet, in my limited combat experience,

¹²⁰ *FM 30-5 1940: Combat Intelligence*, (Washington, DC: U.S. Government Printing Office, 1940), 3.

¹²¹ *Ibid*, 7.

¹²² Schwien, 50.

have I received from any unit specific answers to my specific EEIs – as a matter of routine or even extraordinary practice.”¹²³

LTC Robert R. Glass and LTC Phillip B. Davidson (1948)

Intelligence is for Commanders, published in 1948, resulted from the collaboration of two instructors at the Command and General Staff College – LTC Robert R. Glass and LTC Phillip B. Davidson. The authors intended to educate commanders on the subject of military intelligence, stating that “the prime purpose of intelligence is to help the commander made a decision, and thereby to proceed more accurately and more confidently with the accomplishment of his mission.”¹²⁴ Glass and Davidson presented a comprehensive introduction to intelligence work, along with clear “how-to” examples. They portrayed intelligence as highly rational and scientific in nature, and criticized any suggestion that intelligence work is “crystal ball gazing”. They argued that “the production of intelligence is a science – a matter of logic. It is governed by principles which have an application as universal as the principles of war.”¹²⁵ This statement represents a Jominian view of warfare – the idea that there are rational, logical, and specific principles which, when followed, will lead to success.

With regard to the capabilities versus intentions debate, *Intelligence for Commanders* took a middle-of-the-road approach. It presented the case that commanders should consider all of the enemy’s capabilities in a given situation, but that an intelligence officer should be able to “determine which capability the enemy is most likely to adopt, and thereby provide the commander with a basis for weighing his risks.”¹²⁶ Presented as highly practical, this view took into account the inherent uncertainty of the battlefield. Stressing that a commander would never be able to know everything he wanted to know, particularly regarding an enemy’s reactions, the authors said “if information of the enemy is utterly lacking, then the only EEI is ‘where is the

¹²³ Robert Rigby Glass and Phillip B. Davidson, *Intelligence is for Commanders*, (Harrisburg, Pa.: Military Service Publishing, 1948), 72.

¹²⁴ Glass and Davidson, ix.

¹²⁵ Ibid, 3.

¹²⁶ Ibid, 59.

enemy and what is his strength?”¹²⁷ From this perspective, EEI were intended to first establish the enemy’s capabilities, and then conclude which one he was most likely to use. The likelihood of an enemy following a particular “line of action” presented the commander with a clear understanding of the risks he faced when he chose his own COA.

The authors’ definition of EEI focused on commanders’ decisions during the planning effort, not during tactical mission execution. Glass and Davidson claimed that a commander must continually think “of future decisions which he will have to make, and of the information he will need in order to make them.”¹²⁸ They also point out that “in order to ensure that he weighs all pertinent facts, he follows an outline or checklist.”¹²⁹ Appropriately, then, their lasting contribution to EEI included the first set of rules for their development and use. Their four considerations were:

“First, what lines of action can the enemy adopt which will interfere with or favor the accomplishment of our mission?

Second, what is the next major decision which can be foreseen at this time, and what information is needed in order to make it?

Third, what information of the terrain and weather is needed which is not now available?

And fourth, what information pertaining to the situation confronting our unit has been requested by adjacent or higher headquarters?”¹³⁰

In addition to these considerations, *Intelligence is for Commanders* introduced the idea that EEI must be analyzed and broken down into specific indicators. The indicators would be used to task subordinate units or request assistance from higher or adjacent commands. This concept would eventually develop into Specific Information Requirements (SIR) and Specific Orders and Requests (SOR). *Intelligence is for Commanders* also included an early discussion of

¹²⁷ Ibid, 69.

¹²⁸ Ibid, 67.

¹²⁹ Ibid, 42.

¹³⁰ Glass and Davidson, 69.

the intelligence cycle, a detailed chapter on terrain analysis, and covered both counterintelligence and operations security concerns.

LTCs Glass and Davidson tended to address decisions related to planning and selecting a COA. They accepted a high level of uncertainty in war, and equated intelligence collection with the determination of risk on the battlefield. They argued that a commander can never know everything about a situation, but he can determine the essential elements. After careful consideration of these facts, the commander can select the COA most likely to succeed. This mindset, along with a highly analytical “checklist” approach to military operations, resulted in a focus on *execution decisions* rather than *adjustment decisions*. However, Glass and Davidson were clearly more interested in developing situational understanding than in supporting decision points. *Intelligence is for Commanders* included an example “Indications Chart” which reduced EEI for general enemy capabilities (attack, defend, withdraw, reinforce, etc.) into indications, explanations, and a basis for specific orders or requests for collection. It is a long list of indicators and collection tasks to be used in certain situations. Less than ten years later another author would highly criticize this “checklist approach” to EEI, and he would do it using Glass and Davidson’s own arguments.

Risks: The Key to Combat Intelligence – Post Korea

The commander relates everything to risks. He is compelled to do so by the very nature of warfare. For this reason, the intelligence officer can be of greatest assistance to his commander by relating all his work to risks and assistance in their determination.¹³¹

COL Elias Carter Townsend (1955)

COL Elias Townsend served on the faculty of CGSC and, later, as its Deputy Commandant. In 1955, during his time as an instructor, he published *Risks: The Key to Combat Intelligence*. While it was a unique study of the purpose of the intelligence officer and his

¹³¹ Elías Carter Townsend, *Risks: The Key to Combat Intelligence*, 1st ed. (Harrisburg, Pa.: Military Service Publishing, 1955), 21.

relationship to the commander, it was hardly original material. Townsend primarily expanded on some key points originally presented in Glass and Davidson's *Intelligence is for Commanders*, published only seven years earlier. He defined the commander's tactical problem as that of managing risks – both known and unknown – and the purpose of combat intelligence as “[reducing] or [eliminating] the commander's unknown risks.”¹³² The intelligence officer identifies risks to the command by identifying enemy capabilities in any given situation.

Townsend argued that enemy capabilities are derived from the only two “essential” elements of information – enemy strength and location. He clearly detested applying probabilities to enemy capabilities. He saw such practices as a return to older theories of intelligence production based on enemy intentions, and argued that they would result in the commander having less understanding of the risks he will face. Instead, he believed that the intelligence officer should expend all effort in confirming strength and location, never relying on indications for anything other than focusing collection systems on the two essentials.¹³³

In his preface, COL Townsend admitted that he had been criticized for oversimplifying the role of intelligence. However, he felt that intelligence had become practically useless to the commander precisely because intelligence officers had failed to simplify their roles. Glass and Davidson's checklist approach to intelligence had resulted in long, standardized lists of essential information that served to increase understanding of a situation, but not to make specific decisions. Townsend grumbled that “the practice of designating all types of information ESSENTIAL as is done in EEI (Essential Elements of Information) is not logical nor true, and has caused a great deal of confusion,”¹³⁴ and that intelligence had become more complicated than necessary by the “substitution of masses of related but unessential data for the essential

¹³² Townsend, 11.

¹³³ Townsend, 6.

¹³⁴ Townsend, 7.

information.”¹³⁵ He argued that intelligence officers needed to focus on the essentials and approach the problem from their commander’s perspective.¹³⁶

Like Glass and Davidson, Townsend understood that the battlefield was dominated by uncertainty. Their approach had been to collect as much general information as possible in order to limit the number of enemy COAs to a manageable number. For example, the terrain might preclude some enemy capabilities, while making others more likely. After developing a clear understanding of the situation, intelligence officers could focus on the few remaining questions which might reveal the enemy’s adopted plan. Townsend, however, believed that all the extra information simply confused the issue. He wanted to prevent the collection of irrelevant information and simply collect the critical pieces which would establish the enemy’s capabilities.¹³⁷

Despite some excellent points, Townsend’s conclusions were purely tactical and conventional in nature. All his examples were from WWII, despite the fact that the Korean War had just ended. He made no effort to deal with different forms of conflict, or to discuss missions other than attack and defense. While he did concede that strategic intelligence would have to include an estimate of enemy intentions, he never tried to define the distinction between tactical and strategic intelligence. In fact, he discussed the attack on Pearl Harbor as a “tactical surprise” due to “the absence of knowledge concerning... enemy location and strength.”¹³⁸

In 1956, one year after the publication of *Risks: The Key to Combat Intelligence* and eight years since *Intelligence is for Commanders*, the Army released a new version of *FM 30-5: Combat Intelligence*. The new manual did not directly incorporate Townsend’s thoughts, but it was clearly influenced by them. It pointed out that EEI represented “the commander’s highest

¹³⁵ Townsend, x.

¹³⁶ Townsend, 2.

¹³⁷ Townsend, 6.

¹³⁸ Townsend, 17.

priority intelligence requirements”¹³⁹ and that they focused intelligence collection on specific information required at a particular time. It also made the first attempt to describe the characteristics of EEI by requiring that they be “stated in clear, concise, simple language and... phrased as questions.”¹⁴⁰

COL Townsend presented an extraordinarily narrow view of intelligence, decisions in war, and warfare in general. He believed that “a commander’s risks in combat are related primarily and directly to the enemy and the enemy situation.”¹⁴¹ His concern with identifying risks betrayed a conviction that the enemy should only be evaluated with regard to effects on the commander’s objectives. Townsend was not interested in what the enemy *would* do, only in what he *could* do to interfere with the mission. In other words, he really only worried about one source of uncertainty – the enemy – and he believed that it was possible to overcome it. This conventional, tactical understanding resulted in a description of EEI designed solely for fast-paced maneuver operations. He supported the use of EEI to select an initial COA capable of defeating any enemy capability, but never entertained the idea that a commander should have to consider an *adjustment decision* once the plan had been implemented.

Townsend’s approach did not, apparently, work well in Vietnam. Doctrine emerging from that conflict contradicted many of his assertions. In fact, one of the very authors he criticized, LTC Davidson, would have the opportunity to test EEI in combat. Davidson discredited Townsend’s addiction to “strength and location” during the war. However, COL Townsend’s approach would be revived during a post-Vietnam doctrinal debate.

¹³⁹ *FM 30-5 1956: Combat Intelligence*, (Washington, DC: U.S. Department of the Army, 1956), 84.

¹⁴⁰ *Ibid*, 84.

¹⁴¹ Townsend, 10.

Vietnam and General DePuy

The Army's experiences in Vietnam had almost no effect on the development of CCIR in doctrine. For a variety of reasons the lessons learned during the Vietnam conflict were not incorporated into the Army's AirLand Battle doctrine which followed. Unfortunately, this meant that the Army's most recent experiences in COIN did not inform the concepts of EEI or PIR, and certainly did not carry forward to the development of CCIR and our current C2 doctrine.

Lessons-learned from Vietnam were lost because few tactical intelligence officers chose to write about their experiences there and the Army intentionally superseded doctrine which resulted from the Vietnam experience.

After each of the previous major wars the United States had been involved in (World War I, World War II, and Korea) knowledgeable intelligence officers had published professional works covering their views, theories, and techniques for tactical intelligence. These works directly informed the larger intelligence community and impacted doctrine. This trend ended in 1960 with *Combat Intelligence in Modern Warfare* by LTC Irving Heymont. He addressed the impact of nuclear weapons, helicopters, electronics, and other aspects of the modern battlefield, but his focus was firmly fixed on conventional warfare. Following Vietnam there were few books which dealt with tactical intelligence, and none which dealt directly with the use of intelligence to support a commander's decisionmaking.¹⁴² Worse, there were no works which dealt with decisionmaking in a counter-insurgency environment or in what doctrine calls "ill-structured problems."¹⁴³

One of the few books to describe intelligence during Vietnam was a Department of the Army monograph by Major General Joseph A. McChristian. MG McChristian served as General William C. Westmoreland's Assistant Chief of Staff for Intelligence in the U.S. Military

¹⁴² Marc B. Powe, "The History of American Military Intelligence – A Review of Selected Literature", *Military Affairs* Vol. 39 No. 3 (Oct., 1975), pp. 142-145.

¹⁴³ *FM 5-0*, (2-5).

Assistance Command, Vietnam (MACV) from 1965 through 1967. General McChristian became Chief of Army Intelligence in August of 1968 and retired from active duty in 1971. He later contributed to a series of monographs collected into the “Vietnam Series” by the Department of the Army. His account, *The Role of Military Intelligence 1965-1967*, detailed the development of the U.S. intelligence system in Vietnam and some of the initial lessons learned.

McChristian’s philosophy was that sound decisions required good information, and that MI had the responsibility to answer the decisionmaker’s questions – the EEI. He also understood that Vietnam represented a challenge unlike the Army’s recent experiences. MG McChristian had some previous experience with COIN, having served as a member of the first Joint U.S. Military Advisory Group in Athens during the Greek-Communist War. As a result, he knew that “it takes a long time to identify and eliminate insurgents”.¹⁴⁴ He declared that “in Vietnam it was necessary to discard temporarily many of the conceptions that our military education and experiences had engendered.”¹⁴⁵ Contradicting Townsend’s focus on enemy strength and location (originally voiced by LTC Davidson and LTC Glass), he stated “it is not enough to know the strength and location of the enemy. Given only that information a commander might avoid combat because he is outnumbered, even though the enemy is out of ammunition and many of his men are sick.”¹⁴⁶

Ironically, McChristian’s replacement as the MACV Assistant Chief of Staff for Intelligence was Brigadier General Philip B. Davidson, Jr., one of the authors of the post-World War II book *Intelligence is for Commanders*. Davidson had left his position at CGSC and gone on to serve, in 1948, as Chief of the Plans and Estimates Branch in General Douglas MacArthur’s G2 section. He held that position throughout the Korean War. After a series of follow-on assignments he was assigned, in 1967, to replace MG McChristian at MACV. BG Davidson

¹⁴⁴ Joseph A. McChristian, *The Role of Military Intelligence, 1965-1967*, (Washington, D.C.: Dept. of the Army, 1975), 6.

¹⁴⁵ McChristian, 10.

remarked that his approach to intelligence differed from MG McChristian in that he was willing to go beyond the “insistence on facts... into using these facts to foretell future enemy trends and plans.”¹⁴⁷ Davidson’s experiences in Korea had cemented in his mind the fact that commanders eternally want to know “what the hell is the enemy going to do?”¹⁴⁸ He retained his original position somewhere in the middle of the capabilities vs. intentions debate. He recognized that it was necessary for intelligence officers to begin with capabilities – the facts – and then to make estimates of likely enemy intentions.

BG Davidson was the MACV J2 during the Tet Offensive launched in Vietnam in January 1968, which he proclaimed to be only a minor surprise. He retired from active service in 1974, and eventually published two influential histories of the Vietnam conflict, *Vietnam at War* in 1988 and *Secrets of the Vietnam War* in 1990. The latter focused on intelligence issues, but was published far too late to impact post-Vietnam doctrine.

While two former MACV J2s published works dealing with intelligence in Vietnam, they did so several years after their time in country – too late to influence the post-Vietnam doctrinal debate. Their recollections were understandably strategic in nature. Both men fondly remember their briefings to Secretary of Defense Robert S. McNamara, but had little to say about the operational or tactical intelligence requirements of COIN. While MG McChristian made several references to the fact that COIN operations were different from conventional conflicts, he made no real attempt to describe how intelligence techniques or procedures might be different. Where previous conflicts had resulted in manuscripts by lower-ranking intelligence officers detailing their views, theories, and techniques for tactical intelligence, the Vietnam conflict produced none.

In 1973 General William E. DePuy took command of the new U.S. Army Training and Doctrine Command (TRADOC) and set out to prepare the Army for its next war. Despite having

¹⁴⁶ McChristian, 8.

¹⁴⁷ Phillip B. Davidson, *Secrets of the Vietnam War*, (Novato, CA: Presidio, 1990), 11.

¹⁴⁸ Davidson, 11.

spent three years in Vietnam – two as the MACV Operations officer (1964 to 1966) and one as the commanding general of the 1st Infantry Division – DePuy considered the U.S. experience there as an “aberration from the historical trend.”¹⁴⁹ Instead, he saw the 1973 Arab Israeli War as a template for future warfare – a template which “confirmed his strategic outlook and his fundamental ideas about tactics”¹⁵⁰ which had developed according to his experiences in World War II. General DePuy saw “the essence of battle [as] the physical destruction of the opposing force”¹⁵¹ and considered superior firepower and maneuverability to be decisive. He was concerned that the Army’s involvement in Vietnam had robbed it of a decade of technical and doctrinal preparation for conventional warfighting. He decided to rewrite the Army’s Field Manual 100-5 (Operations) as a clear break with the past – particularly the Vietnam War.

General DePuy intended to do more than simply replace a single manual in Army doctrine. By replacing the overall concept of war he would force a change throughout the Army, constituting a “wholesale replacement of the Army’s then-current tactical doctrine.”¹⁵² In 1974 he directed that all Army manuals be rewritten for consistency with the upcoming revision of *FM 100-5*. By doing so he practically guaranteed that the focus of intelligence operations, and therefore the focus of EEI, would be on supporting a commander’s decision during high-intensity conflict similar to the 1973 Arab-Israeli War.

General DePuy also weighed in on another issue – the continuing capabilities versus intentions debate which had been going on since LTC Sweeney and MAJ Schwien had started it before World War II. In 1936 Schwien had managed to remove mention of enemy intentions from Army doctrine, at least in regard to tactical operations. DePuy decided to bring it back. In December of 1974 he personally chaired a small committee which wrote the new *FM 100-5*

¹⁴⁹ Paul H. Herbert and U.S. Army Command and General Staff College, Combat Studies Institute, *Deciding What Has to Be Done: General William E. DePuy and the 1976 Edition of FM 100-5, Operations*, (Fort Leavenworth, Kan.: Combat Studies Institute, U.S. Army Command and General Staff College, 1988), 35.

¹⁵⁰ Herbert, 37.

chapter on intelligence.¹⁵³ The final version, published in 1976, made no mention whatsoever of EEI, but included the following: “enemy ‘intentions’ must be considered along with capabilities and probable actions... Commanders must *always* seek the enemy’s intentions.”¹⁵⁴ The new chapter on intelligence also stressed that intelligence must be “event-oriented”, introduced the Event Matrix to Army doctrine, and praised the use of templates designed to reflect enemy tactics in specific situations.

The 1976 *Operations* manual also argued that the intelligence required by commanders would not vary significantly for the offense, defense, or retrograde. With respect to intelligence collection, it included a description of specific zones within which commanders would focus their intelligence operations. The zones were specific to rank, essentially assigning a standard area of interest (AI) to each level of command from Captain through General. For example, it specified that Colonels would focus on Tactical Intelligence Zones 1 and 2, seeking to determine “enemy movement, reinforcement, artillery locations, air defense positions, assembly areas, armor and other significant tactical indicators and targets.”¹⁵⁵ By intentionally limiting the Army’s mission set to exclude COIN, and by stressing a pre-selected set of events and targets for intelligence collection, the new manual dictated an approach to intelligence collection which was little more than support to targeting.

This conventional approach to intelligence collection ran counter to emerging doctrine which reflected lessons learned from the Vietnam War. MG McChristian had identified the importance of “economic, political, sociological, and psychological characteristics and vulnerabilities of the enemy’s military and political forces”¹⁵⁶, as had *FM 31-16*:

Counter guerrilla Operations and *FM 30-31: Stability Operations – Intelligence*. *FM 31-16*,

¹⁵¹ Herbert, 21.

¹⁵² Herbert, 7.

¹⁵³ Herbert, 59.

¹⁵⁴ *FM 100-5 1976: Operations*, (Washington, DC: U.S. Department of the Army, 1976), (7-13).

¹⁵⁵ *Ibid.*, (7-13).

published in 1963 and revised in 1967, did not specifically mention either EEI or intelligence support to decisionmaking. It did, however, present a comprehensive format for an area study which emphasized political and cultural aspects of an area of operations. It was a checklist approach to understanding the critical factors of the environment and the situation relevant to the insurgency.

FM 30-31, published in 1967 and revised in 1970, did specifically address EEI for Counterinsurgency Operations. It asserted that “EEI... are formulated for stability operations by the same careful considerations as are present for conventional intelligence requirements. However, the collection planning process in stability operations must make provision for political, economic, and sociological data collection, and the intelligence officer must be concerned with a wide variety of non-tactical data to support the mission of the command.”¹⁵⁷ This was the first admission in U.S. Army doctrine that the relevant information in COIN might be significantly different from the information required for conventional warfare. *FM 30-31* also listed 29 example EEIs applicable in a COIN environment. They included:

Are there any legal political organizations which may be a front for insurgent activities?
Are the political boundaries established by the insurgent the same as those established by the government?
What social problems (juvenile delinquency, narcotic addiction, unemployment, poverty, etc.) are, or may become, significant?
What general economic conditions and problems of the nation (limited human or natural resources, low per capita income, savings, consumption, national goals, etc.) are vulnerable to insurgent attack?¹⁵⁸

In addition, *FM 30-31* included a sample collection plan complete with EEI, Indicators, and Specific Requests. The collection plan listed the military as only one of many collection agencies. It also listed police forces and host nation intelligence as well as government agencies

¹⁵⁶ McChristian, 60.

¹⁵⁷ *FM 30-31 1970: Stability Operations – Intelligence*, (Washington, DC: U.S. Department of the Army, 1970), (7-3).

¹⁵⁸ *FM 30-31 1967: Stability Operations – Intelligence*, (Washington, DC: U.S. Department of the Army, 1967), 138-139.

for agriculture, justice, health, transportation, and communications. This approach to EEI was significantly different from that taken by General DePuy at TRADOC.

The example EEI from *FM 30-31* were questions which, if answered, would present a clearer understanding of the situation in a COIN environment. A clear understanding of the situation would lead to better decisionmaking, in a broad sense, for the commander involved in fighting the insurgency. It would assist him in developing COIN strategies and objectives, or in envisioning an acceptable endstate. What these EEI would not accomplish, however, was to identify the specific information necessary to locate and target military forces on the battlefield. They did not support the execution of fires or of specific decision points. They would not match DePuy's requirement that intelligence be "event oriented", and they would not fit well onto an Event Template.

Following the publication of DePuy's 1976 edition of *FM 100-5*, both *FM 31-16* and *FM 30-31* simply ceased to exist. They were replaced in 1981 by the new *FM 100-20: Military Operations in Low-Intensity Conflict*. It ignored EEI completely, but did include a chapter on "How to Analyze an Insurgency or Counter-Insurgency"¹⁵⁹. That chapter included a list of factors impacting an insurgency and a list of Insurgent Activity Indicators. *FM 100-20* disregarded many of the insights found in the Vietnam-era doctrine it replaced. It made little effort to link intelligence priorities to any element of the commander's tactical problem, or to explain how certain information might impact a commander's decision.

AirLand Battle Doctrine

General DePuy's 1976 edition of *FM 100-5: Operations* was not well received by the broader Army community. It was widely criticized for ignoring operational and strategic considerations, for ignoring the psychological dimensions of war, and for focusing too narrowly

¹⁵⁹ *FM 100-20 1981: Military Operations in Low-Intensity Conflict*, (Washington, DC: U.S. Department of the Army, 1981)

on a conventional defense of Europe.¹⁶⁰ DePuy's successor, General Donn A. Starry, took command of TRADOC in 1977 and immediately began an effort to revise or replace *FM 100-5*. This new effort, fueled by a lively Army-wide debate of the 1976 version, resulted in a completely new manual which presented a "wholly different approach to warfare."¹⁶¹ The 1982 version was an "offense-oriented doctrine that the army found intellectually, as well as analytically, convincing."¹⁶² Dubbed "AirLand Battle" after a chapter by that title in the 1976 version, the new doctrine emphasized synchronized attacks throughout the depth of the battlefield, reinstated the principles of war as central to military planning, added the "operational" level of war, and stressed the importance of initiative and imaginative thinking. The new *FM 100-5* clearly stated that intelligence "provides the basis for tactical and operational decisions"¹⁶³ and that commanders would direct the collection of intelligence by articulating their information requirements.

Military Intelligence doctrine changed significantly to support the AirLand Battle concept. The Army replaced *FM 30-5: Combat Intelligence* with two new manuals. *FM 34-1: Intelligence and Electronic Warfare Operations* appeared in 1984, and *FM 34-3: Intelligence Analysis* appeared in 1986. *FM 34-1* replaced EEI with Priority Intelligence Requirements (PIR) and defined them as "those intelligence requirements for which a commander has an anticipated and stated priority in his task of planning and decision making."¹⁶⁴ PIR were described as "any enemy capability, course of action, or characteristic of the battlefield environment which will significantly impact on the commander's tactical decisions."¹⁶⁵ The only other characteristic of EEI to be applied to PIR was that they were to be personally approved by the commander.

¹⁶⁰ Herbert, 96-98.

¹⁶¹ Herbert, 98.

¹⁶² John L. Romjue, "The Evolution of the Airland Battle Concept," *Air University Review*, May-June 1984. Retrieved from <http://www.airpower.maxwell.af.mil/airchronicles/aureview/1984/may-jun/romjue.html>.

¹⁶³ *FM 100-5 1982: Operations*, (Washington, DC: U.S. Department of the Army, 1982), (6-1).

¹⁶⁴ *FM 34-1 1984: Intelligence and Electronic Warfare Operations*, (Washington, DC: U.S. Department of the Army, 1984), (2-10).

Inexplicably, a short paragraph in the 1984 *FM 34-1* explained that PIR could be considered “answered” when the required information was available with an 80% probability of being correct. That is, “unless the requirement involves predicting enemy intentions. If intentions are required, then the process is continued to develop an estimate of enemy probable courses of action.”¹⁶⁶ This was the first, and only, time that Army intelligence doctrine had identified a difference between intelligence requirements based on *intentions* and intelligence requirements based on *capabilities*.

FM 34-1 acknowledged that Low Intensity Conflict (LIC) “is the least studied of all potential conflicts”, but expressed the optimistic opinion that “the IEW principles for the air-land battle apply equally well for LIC.”¹⁶⁷ The 1986 *FM 34-3: Intelligence Analysis* stated that AirLand Battle doctrine was designed for fighting in a mid- to high-intensity conflict. It also stated that intelligence “enables commanders to... win the decisive battles and... attack high payoff targets (HPTs).”¹⁶⁸ The manual continually emphasized the tactical nature of intelligence collection, and actually devoted more space to target development and target identification than it did to generic collection management. Despite the fact that *FM 34-3* barely mentioned PIR, it clearly established that the primary purpose of intelligence was to identify and locate targets for engagement and destruction. This view directly contributed to later practices in which intelligence officers would automatically assign the location of a HPT as a PIR, regardless of whether it required a decision from the commander or not.

Addressing Low-Intensity Conflict (LIC), *FM 34-3* studiously avoided discussing intelligence requirements. Buried in a section titled “Counterintelligence Operations”, the manual addressed a series of questions related to insurgencies. These questions, similar to the

¹⁶⁵ Ibid, (2-10).

¹⁶⁶ Ibid, (3-54).

¹⁶⁷ Ibid, (12-7).

¹⁶⁸ *FM 34-3 1986: Intelligence Analysis*, (Washington, DC: U.S. Department of the Army, 1986),

example EEIs in the 1970 *FM 30-31: Stability Operations – Intelligence*, were focused on information regarding the general situation in a COIN environment. The questions would support an assessment of the situation and contribute to situational awareness, but they were not designed to collect specific information to support a commander’s decision point.

In 1989 the Department of the Army published the first *FM 34-130: Intelligence Preparation of the Battlefield*. It introduced concepts for when and how the commander should develop his PIR. It stated that the commander should include his initial PIR as part of his planning guidance to the staff. Significantly, it also explained that they would be updated based on the decision support template (DST). A DST, covered in great detail in *FM 34-1*, serves as a graphic record of wargaming. It “depicts decision points, timelines associated with the movement of forces and the flow of the operation, and other key items of information required to execute a specific friendly course of action.”¹⁶⁹ This was the first time that doctrine had recommended a particular time in the planning process for the development of PIR. By linking updated PIR to the DST, *FM 34-130* cemented the concept that PIR existed solely to support pre-determined decision points for a specific course of action.

FM 34-130 included a significant discussion of IPB for COIN. While it did not specifically address PIR, it did suggest that decisions would be significantly different in a COIN environment. It explained that DSTs should not be used in COIN, but did not explain how, without a DST to guide him, the commander should finalize his PIR. It did point out that specific insurgent capabilities would directly relate to insurgent HVTs, which could be targeted. Thus, it reinforced the idea that the primary purpose of intelligence would be to locate and target enemy HVTs – even in COIN.

¹⁶⁹ *FM 1-02*, (1-53).

Summary

The first period of CCIR development began during World War I and continued through the development of AirLand Battle doctrine. During this period Army doctrine developed terms and practices to specify the information required by commanders. The effort focused almost exclusively on information about the enemy – considered to be the most variable, complex, and important element of the commander’s tactical problem. During most of this period doctrine was concerned primarily with supporting decisionmaking by helping the commander maintain situational understanding. Essential Elements of Information (EEI) filled this role for over 40 years, despite the fact that several authors tried to limit them to very specific information requirements to support decision points.

During this period several different viewpoints affected doctrine. Some authors focused on decisionmaking as the selection of a COA, while others focused on decisions made during the implementation of a plan – *execution and adjustment decisions*. Many authors accepted a high degree of uncertainty on the battlefield, but they adopted different tactics for dealing with it. LTCs Davidson and Glass, for example, tended to collect as much general information as possible to gain a superior understanding of the situation. COL Townsend, on the other hand, tended to ignore everything but the enemy in an attempt to simplify the problem. He hoped to reduce the complexity of warfare by focusing only on enemy strength and location.

By the time the Army adopted AirLand Battle doctrine in 1982, the concept of EEI had become synonymous with lengthy lists of data for all types of operations and environments. The transition to PIR marked an attempt to restrict the purpose to a single narrowly defined role – to support decision points within a planned course of action. By returning to enemy intentions, first championed by LTC Sweeney after WWI, GEN DePuy agreed that technology could reduce the complexity of the battlefield and make decisionmaking a rational, scientific, and analytical endeavor.

CACDA Studies and the Impact of Automation

The second period of development for CCIR began in 1984, when the Vice Chief of Staff of the Army directed the Combined Arms Combat Development Activity (CACDA) at Fort Leavenworth to “identify the minimum essential information requirements a commander needs for his decision making processes.”¹⁷⁰ The resulting “Commander’s Critical Information Requirements” would represent the baseline requirements for automated Command and Control (C2) systems, and would also establish the requirements for decision aids and graphics for the commander.¹⁷¹ This period was dominated by the concern that advanced automation and sensor technologies would overload commanders with so much information that they would be incapable of separating relevant information from the unimportant.¹⁷² CACDA sponsored a number of studies to identify what kinds of information a commander would need to put AirLand Battle doctrine to use against the Soviet military.

The initial concept for CCIR had absolutely nothing to do with PIR, which developed concurrently in doctrine. In fact, Army doctrine was just beginning to define PIR when CACDA began its studies. As a result, CACDA did not consider the previously developed purposes of EEI or PIR (maintain situational understanding and support decision points). Instead, CACDA pursued the idea that the primary purpose of CCIR would be to manage information – ensuring that computers would be designed to present only the information critical to a commander’s decisionmaking.

Automation and the AirLand Battle

With the expectation that future battles would be incredibly swift and violent, and that the U.S. Army would fight a numerically superior Soviet force, the Army was looking for ways to

¹⁷⁰ Riedel, 1.

¹⁷¹ U.S. Army Combined Arms Combat Development Activity (CACDA), “Division Commander’s Critical Information Requirements (CCIR)”, Fort Leavenworth, KS, 30 April 1985, viii.

speed up decisionmaking.¹⁷³ Convinced that automated tools would help a commander rapidly understand his situation, CACDA set out to identify exactly what information he would need to make effective decisions on the modern battlefield. There was an expectation that computers could be programmed to automatically receive, manipulate, and present critical information to the commander in a manner which would assist his decision-making process.¹⁷⁴

Far from being some theoretical study in decisionmaking, the determination of specific CCIR was an immediate and practical requirement. In 1983, a year before CACDA was formally tasked to determine CCIR, the Army had already developed a draft system specification for the Maneuver Control System (MCS) – the planned C2 system for the AirLand Battle. The specifications included 85 key information items from a previous study¹⁷⁵ “as the basis for designing the system interfaces between the maneuver control system and the control systems for the functional areas of fire support, combat service support, intelligence and electronic warfare, and air defense.”¹⁷⁶ All of these systems were in development during the 1980s, but the Army had not been able to clearly describe just what information would be handled by each, or how it would be presented.¹⁷⁷ Concerned that commanders would wind up with a C2 system that simply flooded them with masses of raw data and irrelevant reports, CACDA set out to identify exactly what kind of information a commander needed to make decisions. MAJ John Schmader, who participated in the early CACDA studies, summarized the problem:

“Studies have shown that too much information may hamper rather than help the decision-making process. One solution to this problem is the development and implementation of an automated command and control system which will provide the commander with only the critical information he needs to execute AirLand Battle doctrine. The key to successful implementation of this

¹⁷² John R. Schmader, “Command Information Requirements on the AirLand Battlefield.” (Fort Leavenworth, KS: SAMS 1985), 3.

¹⁷³ CACDA, 2.

¹⁷⁴ Schmader, 4.

¹⁷⁵ The previous study was the Force Level Information Requirements Plan (FLIRP). The 85 key information requirements identified by the FLIRP study had been initially based on 38 “minimum essential needs” of a commander identified in the first study of this kind – the 1979 Corps Information Flow Study.

¹⁷⁶ Schmader, 31.

¹⁷⁷ Schmader, 3.

architecture is the identification of information which will be automatically manipulated and processed for command use.”¹⁷⁸

Within this statement lie three key concepts which would guide CACDA in its studies. First, CACDA recognized that there was such a thing as “too much” information for a decision-maker. Second, CACDA focused on identifying a standard set of critical information requirements from the perspective of AirLand Battle doctrine. Third, CACDA believed that it was possible for computers to automatically manage and present critical information to commanders. These three concepts served to limit the studies to narrowly defined problems and resulted in findings that were practically useless for decision making outside a conventional battle.

The fear of information overload appeared early in the development of CCIR. Despite realizing the deleterious effect of masses of information flooding the commander, CACDA had no real theoretical basis for determining how much information a commander could be expected to deal with during combat or how commanders actually went about the business of making decisions. None of CACDA’s studies¹⁷⁹ specifically referenced any decision-making theories, or addressed decision-making in different environments. Rather than tackle the decision-making process itself, CACDA focused on the perceived problems of information overload and data presentation.¹⁸⁰ Without a clearly communicated decision making methodology, CACDA could only try to limit CCIR to some manageable number by creating broad information categories and prioritizing them for the commander. For example, one CCIR survey claimed that an objective of

¹⁷⁸ Schmader, 3.

¹⁷⁹ “CACDA studies” includes the 1979 Corps Information Flow Study, conducted at Fort Leavenworth; the 1980 Battlefield Automation Appraisal number 5, held at Fort Huachuca, AZ; the 1983 Force Level Information Requirements Plan (FLIRP), completed at Fort Leavenworth; the 1984 *Commander’s Critical Information Requirements Survey Results* CACDA report; the 1985 *Division Commander’s Critical Information Requirements (CCIR)* CACDA report; and a 1991 commissioned report from the Pacific Northwest Laboratory titled *Commander’s Critical Information Requirements and How to Determine Them*.

¹⁸⁰ D. Robert Worley et al., *Understanding Commanders’ Information Needs*, (Santa Monica, CA: Rand, 1989), 2.

the study was to minimize the list, but it allowed responding commanders to add any item they felt might be critical to decisionmaking.¹⁸¹

Second, CACDA focused on identifying a standard set of critical information requirements from the perspective of AirLand Battle doctrine. CACDA reports clearly stated that CCIR were intended to focus the development of C2 systems, and that those systems “must process the information in a hierarchy that supports the commander’s execution of AirLand Battle doctrine.”¹⁸² In order to achieve this objective, CACDA made two key assumptions – that the CCIR were quantifiable and that there was a set of CCIR applicable in all scenarios commanders might encounter.¹⁸³ Perhaps to simplify their problem, the researchers at CACDA further focused their efforts by studying and discussing “critical information elements used by the Soviets in developing the requirements for their automated C2 systems.”¹⁸⁴ CACDA even included a classified briefing on the Soviet Decision Cycle during a working group established to determine CCIR.¹⁸⁵ The briefing was conducted prior to the identification of critical information elements for command decisions. This focus on the Soviets as both enemy and example severely limited the scope of the studies, precluding recent experiences in Vietnam and Korea.

Third, CACDA believed that it was possible for computers to automatically manage and present critical information to commanders. Researchers were confident that computers would be able to automatically filter information into pre-selected information categories, and that artificial intelligence would present decision graphics to a commander wherever he was on the battlefield.¹⁸⁶ The clear preference¹⁸⁷ for a technological solution shaped the studies to focus on

¹⁸¹ Riedel, 10.

¹⁸² CACDA, 1.

¹⁸³ Ibid, 4.

¹⁸⁴ CACDA, 8.

¹⁸⁵ CACDA, (H-1).

¹⁸⁶ CACDA, viii.

¹⁸⁷ Considering that CACDA was specifically tasked to develop CCIR in order to create a basis for programming C2 systems like the MCS, CACDA had not only a preference for a technological solution but a directive to create one.

simple problems like information classification and flow rather than on the more complex problem of actually determining how commanders make decisions in a variety of circumstances.

By framing the problem with these three concepts CACDA simplified its research considerably. The search for CCIR had only one relevant goal – to develop a taxonomy of combat information that would be applicable to U.S. commanders employing AirLand Battle doctrine against a conventional Soviet threat, and which could be managed by the technology of the day. With this understanding of the problem, CACDA conducted or commissioned a series of studies to determine the CCIR.

CACDA Studies and Conclusions

The directive for CACDA to identify CCIR specified three phases for the project. Phase 1 was a survey of active component commanders and school commandants to determine if there was consensus on a set of critical information requirements. Phase 2 consisted of a General Officer Working Group to discuss and validate a CCIR product. Phase 3 –independent evaluations to validate the CCIR product and identify potential oversights – included a series of supplementary studies. Most of these assessments, surveys, and studies were focused entirely on the execution of AirLand Battle doctrine against a conventional Soviet threat. Only one, a RAND study commissioned by CACDA in 1989, attempted to address the actual process of decisionmaking and develop a theory of it.

In September 1984, CACDA sent a CCIR survey to 28 Commandants and Corps and Division commanders. The one page survey included a pre-selected list of 24 information items.¹⁸⁸ Survey participants were asked to specify which of the items were critical to their decision making with a simple yes or no answer. CACDA applied statistical analysis to the survey results in an effort to determine why particular elements were important to certain types of

¹⁸⁸ The information items included in the survey included the following categories: “Battlefield Geometry”, “Command Mission”, “Enemy Aircraft”, “Radiation Dose Status”, and “Task Organization”.

commanders. For example, the survey results indicated that “79% of the maneuver groups selected CCIR #19 (Friendly Unit Information) while only 33% of the school commandants did so.”¹⁸⁹ The report author must have been mystified by the differences, and could only comment that they “may suggest hypotheses to be examined in future studies or in data collected by other researchers.”¹⁹⁰ The report author also considered the overall response to the survey to be favorable¹⁹¹, a rather charitable view considering the actual nature of the responses. Comments cited the CCIR list as “passive and managerial in nature”, “overly simplistic”, and lacking “sufficient degree of detail”¹⁹². Lieutenant General Wetzel, Commander of V Corps, indicated that he understood the point of the survey, but not the method, when he responded that “the standardization of command and control within the Army is important. I’m not sure I understand all this – everything is important.”¹⁹³ Another commander, Lieutenant General Ulmer of III Corps, clearly did not give a favorable response when he said “I think we have been captured by the computer programmers. This is not ready for a decision because the elements are not well defined. We need to stop and regroup before it’s too late.”¹⁹⁴

Undaunted, CACDA went on to conduct a General Officer Working Group to validate the results of the survey. Conducted in December of 1984, the panel met at Fort Leavenworth and tackled a variety of problems related to automated C2 systems. They intended to first identify decision categories, and then the critical information required for each decision. (Considering that the stated purpose of the Working Group was to validate the results of the previous CCIR survey, this methodology seems to actually *invalidate* it. How could the initial list of information elements have been developed before the discussion of decision types had even occurred?) After beginning with a short list of potential decision types, the panel concluded that

¹⁸⁹ Riedel, 8.

¹⁹⁰ Riedel, 8.

¹⁹¹ Riedel, 9.

¹⁹² Riedel, Annex B, pp. 11-14.

¹⁹³ Riedel, 14.

there was only one decision category for a Division Commander – change of mission. They felt that all other decisions would be formulated by the staff and only endorsed or modified by the commander.¹⁹⁵

After some time examining the one decision they expected commanders to make without the assistance of a staff, the group published a series of findings regarding CCIR. They determined that (1) there is a finite and specific set of information elements critical to a commander's decision-making process, (2) the CCIR must be the catalyst for decision aids and decision graphics¹⁹⁶, and (3) the commander must have continuous access to the CCIR.

The conclusion that a commander's information requirements could be reduced to a manageable number was unsurprising, given that CACDA had framed the problem and conducted their studies to do just that. What was surprising was how the group decided to create their CCIR taxonomy, and how they proposed to present it to the commander. Their findings represented a significant departure from previous thought on tactical decisionmaking. While they recognized that CCIR would be "primarily oriented on the mission, the nature of the threat, and available assets,"¹⁹⁷ the panel chose not to relate them to these classic elements of the commander's tactical problem. Instead, CACDA divided CCIR into eight new categories – intelligence, maneuver, battlefield geometry, fire support, air defense artillery, combat support, combat service support, and command guidance.¹⁹⁸ Each of these categories was further broken down into detailed lists of requirements pulled from a number of sources, including Soviet information requirements that had not appeared in any of the U.S. studies. The resulting CCIR lists had almost no relation to existing doctrine. They were radically different in both nature and content from accepted annexes

¹⁹⁴ Riedel, 13.

¹⁹⁵ CACDA, (E-5).

¹⁹⁶ In 1984, the same year this study was conducted, a former Berkeley Ph.D. student named Bob Gaskins realized that graphics interfaces could revolutionize the design and creation of presentation materials. He designed a computer program he named "PowerPoint".

¹⁹⁷ Schmader, 106.

¹⁹⁸ CACDA, (F-1).

and estimates described in the Army staff manual¹⁹⁹, and they spread similar information requirements across multiple categories. What they did relate to were the seven accepted battlefield operating systems and the five automated C2 systems already in development at the time²⁰⁰, suggesting that the results had more to do with what the Army needed to tell the computers than with what the computers needed to tell the Army.

By arguing that CCIR should be constantly available to the commander, CACDA revealed an underlying assumption regarding the decisions they considered. While PIR were being developed to support specific decisions, CCIR would support generic decisionmaking by providing the commander with a “snapshot” of critical information whenever and wherever he was on the battlefield. This initial view of CCIR had absolutely nothing to do with specific decisions made during the execution of a course of action. In fact, between the long lists of so-called critical information (presented in pre-determined categories) and the requirement that they be constantly available, the Army had cast CCIR in the mold of EEI. CCIR would support decision-making in the same manner – by helping the commander maintain situational understanding.

Having completed the first two phases of the CCIR project, CACDA commissioned a series of independent evaluations to validate the CCIR product and identify potential oversights. Most of these additional studies followed the same general methodology as the CCIR survey and working group. One rather unique study attempted to mathematically determine the criticality of information through nothing more than direct observation of a Division Commander and staff during a three-day simulation exercise. The study assumed that CCIR could be determined by three “indices of criticality” – importance, perishability, and frequency. Using these indices as

¹⁹⁹ *FM 101-5 1984: Staff Organization and Operations*, (Washington, DC: U.S. Department of the Army, 1984).

²⁰⁰ Systems in development included the Maneuver Control System (MCS), Advanced Field Artillery Tactical Data System (AFATDS), Forward Area Air Defense Command Control and Intelligence

guides, the researcher literally applied numerical values to each report that came through the tactical operations center during the exercise. These values were run through a series of equations to determine the relative criticality for each of 58 different types of information. While the primary assumption – that the criticality of some piece of information can be directly related to how often it is transmitted or requested – might be true, the results were not particularly helpful. The fact that the study did not find “PIR Responses” to be a CCIR was particularly troubling.²⁰¹

RAND Independent Evaluation

Another independent evaluation, “Understanding Commander’s Information Needs” by RAND, took a completely different approach to CCIR. The authors did not accept CACDA’s idea that it was possible to determine a list of information requirements which would suffice in any situation. Instead, they believed that it was impossible to prioritize a commander’s information needs without respect to the individual commander and his situation at the time.²⁰² They challenged not only CACDA’s initial concepts, but the entire CCIR program up to that point. In the introduction, the report stated:

“In recent years, the Army has sponsored or conducted a variety of studies of varying methodological quality, all aimed at addressing the higher-echelon command-and-control problem. These studies, most of which resulted in lists of commanders’ information needs, have conceptual and methodological flaws that severely limit their usefulness. More important, we maintain that these studies have missed the main point of the problem. Commanders’ information needs are rarely specific pieces of data but are instead highly variable and human-intensive elements.”²⁰³

RAND started where CACDA had not – by developing a conceptual framework that described how and when commanders actually make decisions. They also succeeded in linking

System (FAADC2I), All Source Analysis System (ASAS), and the Combat Service Support Control System (CSSCS).

²⁰¹ W. Andrew Hesser, *Commander's Critical Information Requirements and How to Determine Them*, (Fort Lewis, Wash; 1991: Pacific Northwest Laboratory).

²⁰² Worley et al., 4.

their conceptual framework to the classical elements of the commander's tactical problem – METT-TC. Rather than search for a technological solution to C2 problems, the study focused on why information was communicated within an Army command post. Their summary of the problem is worth quoting at length:

“The commander seeks a dynamic image of the battlefield that will lead him to understand what action needs to be taken. This image, which is the commander's mental model of the battlefield and its conceptual surroundings, includes military, political and psychological considerations. Depending on the situation, the image probably has about five to nine major components, most of which are based on the traditional factors of METT-T... Further, the image is not merely a depiction; it also includes the commander's understanding of the history of the battlefield situation as well as his projected futures, which rest on his own and the enemy's possible actions. The meaning of any information gained by the commander is driven by the image that frames it, and the value of that information is determined by the manner in which it fits into the image. Therefore, staff members must share their commander's image if they are to understand and supply his information needs. Given this requirement, a major purpose of communications in the command-and-control process lies in the sharing of images.”²⁰⁴

The RAND study revolutionized the Army's approach to decision-making, and drove the development of a completely new approach to Army command and control doctrine. Ironically, it did so without ever actually using the term “CCIR”. What did remain from the CACDA project, however, was the persistent belief that automated tools would provide a solution to information overload, and that information management would be critical to warfare.

Summary

The second period of CCIR development began in 1984, when the Vice Chief of Staff of the Army directed the Combined Arms Combat Development Activity (CACDA) at Fort Leavenworth to “identify the minimum essential information requirements a commander needs for his decision making processes.” The resulting CCIR would represent the baseline requirements for automated C2 systems, and would also establish the requirements for decision

²⁰³ Worley et al., v.

²⁰⁴ Worley et al., vi.

aids and graphics for the commander. This period was dominated by the concern that the introduction of automation and advanced sensor technologies would overload commanders with so much information that they would be incapable of separating relevant information from the unimportant. CACDA sponsored a number of studies to identify what kinds of information a commander would need to put AirLand Battle doctrine to use against the Soviet military.

CACDA pursued the idea that the primary purpose of CCIR would be to manage information – ensuring that computers would be designed to present only the information critical to a commander’s decisionmaking. The CACDA approach was reductionist and analytical because their intent was to create categories of information for automated C2 systems like MCS and ASAS. From this perspective, CCIR would support generic decisionmaking by providing the commander with a “snapshot” of critical information whenever and wherever he was on the battlefield. This initial view of CCIR had absolutely nothing to do with specific decisions made during the execution of a course of action. Many of CACDA’s studies were discredited by the 1989 RAND report “Understanding Commander’s Information Needs”, but the idea that CCIR would support decisionmaking through the management of information remains in doctrine today.

The Introduction of CCIR into Army Doctrine

The third period of CCIR development began in 1989 with the publication of the RAND corporation study “Understanding Commander’s Information Needs” and continued through 2003 with the publication of Field Manual 6-0 (Mission Command: Command and Control of Army Forces). During this period the Army incorporated a number of different concepts and theories together in an attempt to build a solid C2 doctrine. The RAND study in particular influenced the new doctrine, but the Army did not simply accept it in whole. Instead, the initial C2 doctrine included a confusing mix of concepts from the CACDA studies, previous doctrinal concepts like PIR, and a traditional understanding of the commander’s tactical problem. CCIR first appeared in a draft field manual in 1992, then in a revised *FM 101-5: Staff Organization and Operations* in

1997. The concept of CCIR was open to criticism during this period – four monographs from the School of Advanced Military Studies summarize the early criticisms of CCIR. *FM 6-0* replaced significant portions of the 1997 *FM 101-5* and was the Army’s first manual devoted to command and control. *FM 6-0*, along with *FM 5-0*, expanded the concept of CCIR and made them a critical component of the Army’s *visualize-describe-direct* methodology. Decisions made during this period created inherent contradictions in the doctrine of CCIR.

Understanding Commander’s Information Needs

“Understanding Commander’s Information Needs” introduced a number of concepts which formed the foundation of current Army C2 doctrine. By far the most important of these was the commander’s *image* – his mental model or representation of his current situation. According to the authors, an Army commander is pre-disposed by doctrine and training to build an image in terms of METT-TC, and he continually refers to that image to make decisions. The commander’s information needs are therefore directly related to testing, maintaining, or restoring his image. He shares both his image and his information needs by communicating his *intent* to subordinates and staff.²⁰⁵

The study identified three different modes of information exchange between a commander and staff. The first two – *pipeline* and *alarm* modes – performed the function of image testing for the commander, while the third – *tree* – allowed the commander to repair or reconstruct his image after an unanticipated event.²⁰⁶ Commanders switch between these information modes depending on the level of uncertainty they face and the level of detail they require. Put simply, the *pipeline* mode provides a steady flow of standard information to the commander, the *alarm* mode provides him with an instant report based on criteria he establishes,

²⁰⁵ Worley et al., 17.

²⁰⁶ Worley et al., 37.

and the *tree* mode gives him the opportunity to directly request new information in order to rebuild his image. According to RAND –

“When the commander has what he believes to be a valid image and believes that his subordinates understand that image, then the system will be in pipeline mode. If, on the other hand, an event that potentially disrupts the image occurs, then the system moves to alarm mode. Tree mode is used to rebuild an image or to establish understanding between commander and subordinates.”²⁰⁷

These different information modes described an interactive information flow between the commander and his staff. They were also related to the way a commander naturally builds and maintains his image. According to RAND, the commander builds an *image* in order to take an *action*. His image-building occurs in two cycles – Mission Planning and Mission Effectiveness Monitoring. Action also occurs in two cycles – Resource Order Generation and Compliance Monitoring. Mission Effectiveness Monitoring typically uses the *pipeline* mode of information exchange. A triggered *alarm* generates a decision by the commander, which could result in a return to Mission Planning. Alarms are necessary in unpredictable, uncertain, and complex environments.²⁰⁸ The report also established that PIR were examples of commander-directed alarms.²⁰⁹

RAND also recognized that commander’s often made decisions without following a formal, analytical, process. The report noted that:

“Previous views suggested that experts solve problems by the application of general principles and deductive steps that provide causal links between stages in a problem-solving sequence; in fact, this mode of problem solving appears to be quite rare. To the contrary, the behavior of experts seems more intuitive than scientific; yet the evidence indicates that this intuitive behavior, when exercised by an expert with a deep understanding and rich knowledge of his field and with information available to him on request, produces effective decisions. Experts in most fields tend to solve problems and to make decisions by recognizing existing situations as instances of things with which they are familiar on the basis of their past experience.”²¹⁰

²⁰⁷ Worley et al., pp. 46-47.

²⁰⁸ Worley et al., 43.

²⁰⁹ Ibid.

²¹⁰ Worley et al., pp. 72-73.

This finding discredited any attempt to establish a common set of CCIR for all commanders in all situations, and introduced intuitive decisionmaking to Army doctrine. It also highlighted the interactive nature of decisionmaking.

Initial C2 Doctrine

In 1992 a draft version of *FM 101-5* appeared. The new manual was titled “C2 for Commanders and Staff”, and included modified versions of the concepts introduced by the RAND study. The concept of a *commander’s image*, communicated and shared by his *intent*, and maintained through different *information exchange modes* was adopted into Army doctrine for both C2 and information management. The commander’s *image* became *battlefield visualization* – consisting of intent, planning guidance, and CCIR.

RAND’s three information modes survived in a different form. Rather than maintain the modes as a description of the commander’s interaction with his staff and the information, the Army chose to specify three different types of information. The pipeline mode became routine information, the alarm mode became critical information (CCIR), and the tree mode became exceptional information.

The draft manual also introduced the idea that CCIR could be categorized as Priority Information Requirements (PIR), Essential Elements of Friendly Information (EEFI), or Friendly Forces Information Requirements (FFIR). While PIR and FFIR were clearly related to traditional elements of the commander’s tactical problem (METT-TC), EEFI were different. They were not information to be collected. Instead, they were described as vital information that should be protected from enemy intelligence. Including these sub-categories linked CCIR to the previously established rules and purposes of PIR.

The 1992 draft was never published, but many of its new concepts were included in a 1997 update of *FM 101-5: Staff Organization and Operations*. The new manual described CCIR in a simplified manner. It said:

“The CCIR are normally expressed as priority intelligence requirements (PIR)—information about the enemy; essential elements of friendly information (EEFI)—information needed to protect friendly forces from the enemy’s information-gathering systems; and friendly forces information requirements (FFIR)—information about the capabilities of his or adjacent units.”²¹¹

The new manual relied heavily on the RAND report. In fact, it included several passages that were drawn almost verbatim from “Understanding Commander’s Information Needs.”

Compare the following two statements:

“Understanding Commander’s Information Needs” – “The commander seeks a dynamic image of the battlefield that will lead him to understand what action needs to be taken. This image, which is the commander’s mental model of the battlefield and its contextual surroundings, includes military, political, and psychological considerations.”²¹²

FM 101-5 (1997) – “The commander seeks a dynamic battlefield visualization that will lead him to understand what actions the force requires to produce success. His visualization includes military, political, and psychological considerations.”²¹³

The 1997 *FM 101-5* also included the concept that commanders and staffs recognize critical information because it indicates a departure from the commander’s image, or visualization, of the battlefield. Other aspects of the RAND study incorporated into doctrine included staff officer duties like “identifying and anticipating requirements”, “monitoring operations”, and “managing information”. Also, Mission Effectiveness Monitoring and Compliance Monitoring survived as two elements of assessment – monitoring and evaluating.

Despite the heavy reliance on the RAND report concepts, the new manual only added them to a doctrine already overloaded with terms and practices for managing information. The 1997 *FM 101-5* related CCIR to *identifying risks* (as had COL Townsend after the Korean War), made them integral to *information management* (as had the CACDA studies), designated them as

²¹¹ *FM 101-5 1997: Staff Organization and Operations*, (Washington, DC: U.S. Dept. of the Army, 1997), (5-8).

²¹² Worley et al., vi.

²¹³ *FM 101-5 1997*, (I-1)

essential to *support the commander's visualization* (from the RAND study), and identified them as necessary to *make critical decisions* (as had PIR).

Despite all these potential uses of CCIR, the 1997 manual clearly intended that they would be used primarily to support decision points. It specified that “two means for deriving the CCIR are war gaming and the production of a decision support template”²¹⁴ and that CCIR are “time-sensitive in that they drive decisions at decision points.”²¹⁵ So, while the 1997 *FM 101-5* introduced CCIR into Army C2 doctrine it failed to clarify how they were different from PIR.²¹⁶

Early Criticism of CCIR

The unpublished 1992 draft and the 1997 *FM 101-5* officially introduced CCIR to Army doctrine, although the concept had been included in the instruction at the Command and General Staff College (CGSC) since the mid-1980s. As a result, commanders involved in Operation Desert Storm (1991) were familiar with the term, but did not have a clear definition of it.²¹⁷ In the years between 1992 and the advent of *FM 6-0* in 2003, the concept of CCIR was subjected to critical review, mostly from students at the CGSC and the School for Advanced Military Studies (SAMS).

Two SAMS monographs studied the 1992 draft manual and resulted in critiques of the doctrinal concept of CCIR. Some of the authors' recommendations were incorporated into the 1997 manual, but most were not. MAJ Michael R. Barefield, in his monograph “Commander's

²¹⁴ *FM 101-5 1997*, (I-2)

²¹⁵ *FM 101-5 1997*, (5-7)

²¹⁶ The heavy emphasis on the link between CCIR and decision points was likely a result of “coaching” from the Army's training centers. In articles like the 1995 “Directing Intelligence Operations I: To Link or Not to Link PIR”, by MAJ John F. Lady (Senior Intelligence Observer and Controller, Operations Group A, BCTP), and the 1998 “Wargaming at NTC: Decision Point – PIR Linkage”, by Lieutenant Colonel Thomas M. Smith (Senior Intelligence Trainer, NTC), Army trainers emphasized the tactical nature of PIR and insisted they must be linked to decision points. MAJ Lady argued that recent doctrine had failed to retain this important link, and that it had been “rediscovered” by senior intelligence officers during the 1991 Gulf War.

²¹⁷ “CCIR” had actually appeared in a 1990 version of *FM 71-100* (Division Operations). They were described as information requirements for “friendly force reporting” – what current doctrine calls FFIR.

Critical Information Requirements (CCIR): Reality versus Perception” argued that the concept had several inherent weaknesses. His first criticism was that the doctrine was unclear regarding who developed CCIR. Pointing out that the doctrine defined CCIR as belonging to the commander, yet specified a staff process to develop them, Barefield called the concept confusing. He also argued that PIR, FFIR, and EEFI were “detailed control information promulgated by the staff,”²¹⁸ while CCIR were an element of command tied to the commander’s visualization. He recommended that the control elements and command elements be listed as separate categories. This separation would create three categories of requirements – routine, control (PIR, FFIR, and EEFI), and CCIR. He also criticized the term *exceptional information* as “a confusing doctrinal use of terms for unpredicted critical information”²¹⁹ and recommended that the term be dropped.

The second monograph, “Commander’s Critical Information Requirements: The Key to a Commander’s Battle Image”, by MAJ Susan P. Kellett-Forsyth, made similar recommendations. She concluded that “CCIR has been further defined by its sub-categories of PIR, EEFI, and FFIR, and has become confusing and less responsive to the needs of the commander. A simple concept, CCIR, has been made more complicated by increasing its range of available information options.”²²⁰ She also debated the usefulness of *exceptional information*, saying that the doctrine would need to either more clearly distinguish the two or remove *exceptional information* as a category.

Following the release of the 1997 *FM 101-5*, which officially added CCIR to Army doctrine, two more SAMS monographs reviewed the concept. The first, a 1997 monograph titled “Digitized Chaos: Is Our Military Ready for the Information Age?” by MAJ John W. Charlton, concluded that the doctrine for CCIR relied too much on analytical decisionmaking processes.

²¹⁸ Michael R. Barefield, “Commander’s Critical Information Requirements (CCIR): Reality versus Perception,” (Fort Leavenworth, KS: SAMS 1992), 40.

²¹⁹ Barefield, 41.

²²⁰ Susan P. Kellett-Forsyth, “Commander’s Critical Information Requirements: The Key to a Commander’s Battle Image,” (Fort Leavenworth, KS: SAMS 1994), 12.

He said that “the staff recommends CCIR to the commander early in the MDMP but it is more likely linked to the staff’s analytical process than to the commander’s vision of success”²²¹ and that “it is entirely possible that the staff and the commander completely disagree on what information will be critical for the operation.”²²² Charlton also introduced a discussion of complexity theory and its potential impact on military operations. Going back to the 1989 RAND report “Understanding Commander’s Information Needs”, he recommended that the Army clearly link sub-categories of CCIR to RAND’s three information modes – pipeline, alarm, and tree.

In 1998 MAJ John R. Sutherland wrote “Win, Lose, or Draw: CCIR and the Commander’s Role in Building Shared Vision”. Like Charlton, he discussed complexity theory and its relation to military operations. He concurred with doctrine by affirming the link between CCIR and decision points. His primary criticism of the doctrine for CCIR was that, while a number of manuals described CCIR, not a single manual adequately described *how* to create them. He recommended a “CCIR derivation methodology” that would emphasize the commander’s role in developing all CCIR. His methodology required the commander to conduct a significant analysis on his own, even developing his own PIR and FFIR for each specific decision point.²²³

Other than these four monographs, few authors challenged the introduction of CCIR into doctrine. One particular issue, the inclusion of PIR as a sub-category of CCIR, failed to generate even a single article or comment in the Military Intelligence Professional Bulletin. Perhaps the result would have been different if CCIR had actually been defined as somehow different from PIR, but they were not. CCIR had inherited the properties of PIR and passed them on to FFIR as well. As these early criticisms pointed out, the doctrine blurred the line between the command function and the control function, erasing distinctions between the commander and the staff. It

²²¹ John W. Charlton, “Digitized Chaos: Is Our Military Decision Making Process Ready for the Information Age?” (Fort Leavenworth, KS: SAMS 1998), 31.

²²² Charlton, 19.

also created a taxonomy of information categories which would only grow in complexity over time.

Field Manuals 6-0 and 5-0

FM 6-0 and *FM 5-0* together replaced the 1997 *FM 101-5*. *FM 6-0* addressed C2 and information management, while *FM 5-0* addressed planning and problem-solving. The two manuals expanded the concept of CCIR, making them a critical component of the Army's *visualize-describe-direct* methodology for decision-making. They also introduced the distinctions between intuitive and analytic decisionmaking, and between execution and adjustment decisions. Other new terms included "Common Operational Picture" and "Situational Understanding". An expanded chapter on Information Management removed EEFI as a sub-category of CCIR and instead listed it, along with *exceptional information*, as a "Usage Category" of Relevant Information (RI).

FM 6-0 attempted to mix concepts from the CACDA studies and the RAND study with existing doctrinal concepts like PIR. It also included more recent studies of intuitive decisionmaking. The preface states that "FM 6-0 gathers the scattered parts of C2 doctrine discussed in multiple sources... into one field manual that goes beyond them in detail."²²⁴ The result is a concept that is ambiguous, confusing, and overly complex. By applying new concepts to old terms, the new doctrine created contradictions and inconsistencies regarding the purposes and use of CCIR.

The only significant change to CCIR since the publication of *FM 6-0* appeared in *FMI 5-0.1: The Operations Process*, published in March of 2006. *FMI 5-0.1* serves as interim doctrine and reflects not only full-spectrum operations, but also new joint concepts like the Effects Based Approach (EBA). It includes an entire chapter on assessment, expanding the doctrine found in

²²³ Sutherland, 40.

²²⁴ *FM 6-0*, xii.

FM 6-0. It says “some commander’s critical information requirements (CCIRs) support assessment. Commanders establish CCIRs that help them determine whether specific decisions are succeeding or if they must adjust the operation.”²²⁵ Assessment is described as the continuous monitoring and evaluation of the current situation and progress of an operation. This purpose of CCIR – to support assessment – is addressed in greater detail in Chapter Three.

Conclusion

During this third period in the development of CCIR, two particular decisions created contradictions in the concept of CCIR. First, rather than accept the RAND study concepts of different information exchange modes, doctrine specified different categories of information. This decision attempted to mix an interactive approach to decisionmaking with a reductionist, analytical approach designed for automated reporting procedures. By ignoring the commander’s natural decisionmaking process in favor of information management procedures, the new doctrine failed to adequately describe how CCIR should be developed and who should be ultimately responsible for developing them. It also led to CCIR being described as key to both a commander’s visualization and information management – two separate activities within the command and control process. By applying new concepts to old terms, the new doctrine created contradictions and inconsistencies regarding the purposes and use of CCIR.

Second, the new doctrine included PIR, FFIR, and EEFI as sub-categories of CCIR without describing any real difference between them. This despite the fact that PIR had been designed to support decision points while CCIR had – up to this point – been designed to maintain situational understanding. CCIR automatically assumed the rules and characteristics of PIR and came to be understood as nothing more than an umbrella category for all information needed to trigger *execution decisions*. This understanding of CCIR was emphasized during

²²⁵ *FMI 5-0.1*, (5-1).

training, particularly at the Army's Combat Training Centers (CTCs), and persisted until the publication of *FM 6-0* in 2003.

Summary

A historical review of the development of CCIR in doctrine reveals that they have always been expected to accomplish three distinct purposes – to maintain situational understanding, to support decision points, and to manage information. A fourth purpose – to support assessment – is a relatively new addition to doctrine. These purposes were all developed with conventional warfare in mind. In fact, lessons learned from unconventional wars against insurgents or guerrillas were rarely applied to the concept of CCIR, and were systematically removed from doctrine when they did appear.

Running through this history is a constant theme related to the uncertainty inherent in war – the ongoing “capabilities” versus “intentions” debate. Those who argue that intelligence officers must only report the enemy's capabilities in a given situation tend to be those who have accepted uncertainty as a constant aspect of the battlefield. Those who argue for determining the enemy's intentions tend to be those who believe that modern technologies and methods can reduce uncertainty to a level which allows an analyst to conclude the enemy's actual plan.

Essential Elements of Information (EEI) were initially developed by authors who subscribed to the capabilities school of thought. From WWII through the Korean War, intelligence officers focused on describing the enemy's capabilities. Whether they intended to or not, this approach led to a requirement to maintain situational understanding by collecting as much general information as possible. EEI were often criticized for becoming long lists of information requirements that did not directly relate to decisions on the battlefield. Despite the fact that Army doctrine tried to limit EEI to specific information requirements at specific times –

supporting decision points – they continued to be presented as checklists of data requirements.²²⁶

During this period EEI served to accomplish two purposes. First, they served to maintain situational understanding by providing the commander as much data about the enemy and environment as possible, giving him a clear understanding of the enemy's capabilities. Second, they served to support decision points by specifying exactly what information would be required at a particular time for the commander to make a decision.

During the Vietnam War emerging doctrine moved away from describing EEI as specific, short-term requirements. Instead, they were presented as long-term questions regarding political, social, or economic conditions which might affect operations. Rather than focus on information necessary to locate and target military forces, they focused on giving the commander a clearer understanding of his situation. This development signaled a shift in critical information requirements, or at least a shift in priority for the purpose of EEI, based on a non-conventional battlefield. Commanders and staffs focused more on maintaining their situational understanding than on executing tactical decision points. However, the Vietnam era doctrine regarding EEI was superseded when GEN DePuy ordered a rewrite of all Army doctrine in the late 1970s.

GEN DePuy subscribed to the intentions school of intelligence analysis. With his focus on rapid maneuver warfare, and a growing reliance on technological superiority, the Army replaced EEI with PIR. PIR were designed to trigger anticipated decisions based on pre-determined criteria. They were tied to an analytical staff process and linked to targeting. When doctrine prescribed that PIR would be developed to support a decision support template it cemented the idea that they existed to support decision points and *execution decisions*.

Concurrent with the development of PIR in doctrine, CACDA began a series of studies to determine what a commander's critical information requirements were. CCIR were initially developed to manage information flow, storage, and presentation within automated information

²²⁶ As an example, the 1993 *FM 55-50: Army Water Transport Operations* included a twelve page

systems like ASAS and MCS. Early studies believed that it was possible to generate a finite list of information needs for the execution of AirLand Battle against a Soviet military threat. CCIR were intended to prevent the information overload which would result from advanced sensor and communications technology. This view of CCIR had nothing to do with specific decisions. Instead, they would support generic decisionmaking by providing the commander with a “snapshot” of critical information whenever and wherever he was on the battlefield. By setting information management priorities, CCIR would become the basis for maintaining the commander’s situational understanding. The CACDA approach to CCIR led to multiple interrelated categories of information. The categories were necessary to allow analysts to enter data into automated C2 systems, and for the systems themselves to manage and present the data in a meaningful way. A RAND study titled “Understanding Commander’s Information Needs” discredited many of the CACDA studies, but the Army retained information management as an important purpose of CCIR.

The RAND study revolutionized Army C2 doctrine, particularly through the addition of concepts like battlefield visualization and commander’s intent. The report identified that commanders tend to make intuitive decisions and need to interact with their staff and available information. Unfortunately, the Army mixed the RAND theoretical framework with other existing doctrinal concepts, resulting in a C2 doctrine which was ambiguous, confusing, and overly complex. As an example, the decision to list PIR as a sub-category of CCIR complicated the doctrine and led to internal inconsistencies and contradictions. Early criticism of CCIR identified this problem, as well as the possibility that the commander’s intuitive decisionmaking needs would be produced through an analytical process. Nevertheless, CCIR remain a critical component of the *visualize-describe-direct* methodology, and are presented as vital to practically all aspects of military operations. Chapter One of this monograph reviewed the current doctrine

appendix of EEI for different operations and situations.

of CCIR, and summarized the internal contradictions and inconsistencies which resulted from the historical development of CCIR.

Chapter Three: CCIR in a Complex Environment

The purpose of this chapter is to address the use of CCIR in complex environments, particularly counter-insurgency operations. There are five sections. The first section describes the Army's approach to problem-solving, establishing that doctrine distinguishes problems by the level of complexity inherent in the situation. It also makes the case that counter-insurgency is an example of an ill-structured, or complex, problem. The second section introduces aspects of complexity theory and argues that uncertainty is an unavoidable characteristic of war. It concludes that C2 in complex environments must stress flexibility and adaptability, and will result in more *adjustment decisions* than *execution decisions*. A third section discusses the U.S. Army's commander-centric approach to decisionmaking. It briefly argues that the commander's personal capacity to understand, learn, and adapt is paramount to successful operations, and concludes that CCIR reflect a commander's personal approach to decisionmaking. A fourth section summarizes intuitive decisionmaking in complex environments by reviewing the conclusions of three modern studies. It establishes that three of the four purposes of CCIR – maintain situational understanding, support decision points, and support assessment – are related to tactics employed by expert decisionmakers. More specifically, they reflect how successful decisionmakers deal with uncertainty. The last section in this chapter suggests that, while information overload is a real concern, it has been poorly defined. It argues that information overload is not simply a problem of too much data; it is the provision of too much uncertain data, in a non-interactive format, and *in too little time* to allow an informed decision. It also concludes that the fourth purpose of CCIR – to manage information – is not supported as a valid tactic to deal with uncertainty because it prevents the commander from interacting with the very data he

needs to recognize trends and patterns. While information overload does occur, it cannot be solved by using a succinct list like CCIR to limit information flow to the commander.

Problem-Solving

The Army defines a *problem* as “a difference between the current state or condition and a desired state or condition.”²²⁷ The first, and arguably the most important, step in the Army problem-solving process is to recognize and define the problem. The last step is to select and implement a decision. *Decisionmaking*, then, could be said to be the end result of *problem-solving*, although Army doctrine tends to use the two terms interchangeably.²²⁸

The Army distinguishes problems by the level of complexity inherent in the situation. Doctrine recognizes three types of problems: well-structured, medium-structured, and ill-structured. Well-structured problems are easily defined, come with all the relevant information, and have a recognized solution technique. Ill-structured problems are hard to define, lack relevant information, and are hard to analyze because they are “complex”. Medium-structured problems fall between these two extremes, and “represent the preponderance of the problems Army leaders face.”²²⁹ They may be partially defined and come with some relevant information. Medium-structured problems might be solved through “routine solutions”, but will require “creative skills” and involve “assumptions about future conditions.”

War, the environment in which commanders operate, is certainly a complex system, and COIN is arguably the most complex form of warfare. It requires “a different mix of offensive, defensive, and stability operations from that expected in major combat operations”²³⁰ It includes a mix of political, cultural, and economic factors, as well as a variety of different “actors” seeking to achieve their goals through a variety of different strategies. COIN represents an ill-structured

²²⁷ FM 5-0, (2-7).

²²⁸ FM 5-0 describes the Military Decision Making Process as an adaptation of Army problem-solving.

²²⁹ FM 5-0, (2-5).

problem, as opposed to the medium-structured problems represented by conventional military operations. Military doctrine recognizes that COIN is “an extremely complex form of warfare” that “presents a complex and often unfamiliar set of missions and considerations.”²³¹ *FM 3-24: Counterinsurgency Operations* notes that planners find it difficult to recognize solutions to problems in COIN because of “competing forces” and “complex interdependencies.”²³² Its nature makes it “counterintuitive to the traditional U.S. view of war.”²³³ It is the complexity of COIN which presents challenges to a C2 doctrine focused on medium-structured problems and conventional warfare.

Complexity Theory and C2

Complexity theory attempts to explain the consequences and behaviors resulting from actions in a complex system.²³⁴ A system is considered to be complex “when there are strong interactions among its elements, so that current events heavily influence the probabilities of many kinds of later events.”²³⁵ Actions in a complex system may generate unexpected effects. Any attempt to control one part of the system will always have an impact on other parts, resulting in unexpected side effects and long-term repercussions.²³⁶

Some complex systems can also be described as “adaptive”. Complex Adaptive Systems (CAS) “include many actors all adapting to each other, making the future extremely hard to

²³⁰ *FM 3-24: (2-5).*

²³¹ *FM 3-24: (1-26).*

²³² *FM 3-24: (4-1).*

²³³ *FM 3-24: (1-26).*

²³⁴ The term “Complexity Theory” covers a variety of disciplines. While there is no widely accepted definition, this one summarizes “complexity theory” as it relates to non-linear systems. For more on this subject see James Moffat, *Complexity Theory and Network-Centric Warfare*, CCRP Publication Series, 2003. Retrieved on 5 February 2007 from http://www.dodccrp.org/publications/pdf/Moffat_Complexity.pdf.

²³⁵ Robert M. Axelrod and Michael D. Cohen, *Harnessing Complexity : Organizational Implications of a Scientific Frontier*, (New York: Basic Books, 2000), 7.

²³⁶ Dietrich Dörner, *The Logic of Failure: Why Things Go Wrong and What We Can Do to Make Them Right*, 1st American ed. (New York: Metropolitan Books, 1996), 38.

predict. These systems challenge understanding as well as prediction.”²³⁷ Because actors within the system respond to their environment and continuously adapt their own goals and strategies, CAS defy routine solutions. John F. Schmitt²³⁸, addressing the impact of complexity on military command and control, referred to this as “interactive complexity.” He concluded that “with a complex system it is usually extremely difficult, if not impossible, to isolate individual causes and their effects.”²³⁹ Schmitt argued that complexity theory challenges the U.S. view of command and control, which he described as designed to “impose order, precision, and certainty.”²⁴⁰ Such a C2 system expects that, with sufficient information about the environment, it will be possible to control war. Complexity suggests the opposite – that war is a fundamentally uncertain enterprise which can never be fully controlled.

While recent U.S. doctrine generally accepts that modern warfare is complex, it has yet to accept that uncertainty is an inevitable characteristic of war. Instead, doctrine continues to pursue “information superiority” as a means to impose order on the battlefield. In a detailed study of defense transformation concepts Lieutenant Colonel Herbert R. McMaster demonstrated that “there is an obvious contradiction between acknowledging the uncertainty of contemporary strategic and operational environments and asserting that war in those environments will be nearly certain, low cost, low risk, and efficient.”²⁴¹ He concludes that successful war plans

²³⁷ Axelrod and Cohen, xi

²³⁸ John F. Schmitt is a military consultant and writer. A major in the U.S. Marine Corps Reserve, he has been closely associated with Marine Corps doctrine since 1986. His credits include the manuals for Ground Combat Operations, Warfighting, Campaigning, Command and Control, and Planning, as well as the book *Mastering Tactics*. Major Schmitt continues to lecture at the National Defense University, the Marine Corps Schools in Quantico, and elsewhere.

²³⁹ Schmitt, John F. “Command and (out of) Control: The Military Implication of Complexity Theory” in *Complexity, Global Politics, and National Security*, David S. Alberts and Thomas J. Czerwinski, eds. (Washington: National Defense University, 1997). Retrieved from <http://www.ndu.edu/inss/books/books%20-%201998/Complexity,%20Global%20Politics%20and%20Nat'l%20Sec%20-%20Sept%2098/ch09.html>.

²⁴⁰ Ibid.

²⁴¹ Herbert R. McMaster, “Crack in the Foundation: Defense Transformation and the Underlying Assumption of Dominant Knowledge in Future War”, (Carlisle Barracks, PA: U.S. Army War College, 2003), 8.

should emphasize flexibility and adaptability rather than assume that technology can overcome uncertainty. He warned that

“The orthodoxy of near-perfect intelligence inflates the importance of the headquarters and threatens to have a stultifying effect on high-level command. Terms like information dominance and decision dominance impart the idea that making near-perfect decisions based on near-perfect intelligence is the essence of command.”²⁴²

Concerned that a reliance on a superior knowledge might discourage initiative and risk taking, McMaster recommended that the Army condition its leaders to cope with uncertainty.²⁴³

Both Schmitt and McMaster approach warfare from the perspective that uncertainty is an inescapable characteristic of the battlefield – it cannot be defeated by technology or through rational decisionmaking processes. Accepting uncertainty as a constant of war has significant implications for how the military defines command and control. Schmitt concluded that C2 should be considered to be an adaptive process in which “‘command’ is top-down guidance and ‘control’ is bottom-up feedback.”²⁴⁴ Commanders must plan to react to changes in their environment, continuously assessing the success or failure of operations. Plans “should not prescribe detailed end-state conditions”. In fact, there are so many interconnected variables that it is pointless to try to find the perfect plan or reach the perfect decision. McMaster agreed, stating that “an appreciation for the uncertainty of war permits commanders to understand a wide range of possibilities and contingencies.”²⁴⁵ Both authors champion the argument that *adaptability* is vitally important during any military operation.

In terms of Army decision types, planning to adapt means more *adjustment decisions* and less *execution decisions*. If a planner accepts uncertainty as a constant, he will be less likely to make detailed plans with a series of anticipated decision points. Instead, the commander will focus on assessing the situation to determine when new threats or opportunities appear. By

²⁴² McMaster, 62.

²⁴³ McMaster, 63.

²⁴⁴ Schmitt, 10.

continually monitoring his situation and evaluating his own operations, a commander will be more likely to succeed in a complex environment. The Army's new COIN manual has recognized this by listing "Learn and Adapt" as a modern COIN imperative.²⁴⁶

A Commander-Centric Approach

The requirement to learn and adapt applies to both individuals and organizations, but Army C2 doctrine places the bulk of the responsibility on the commander. It is the commander who directs and synchronizes combat power to impose his will on the situation.²⁴⁷ Founded on Clausewitz's theories and Napoleon's example, the Army has always expected its commanders to be the central focus of the C2 system.

Described as the "God of War" and the "most competent human being who ever lived,"²⁴⁸ Napoleon emphasized the role of the commander. He observed that "there are certain things in war of which the commander alone comprehends the importance. Nothing but his superior firmness and ability can subdue and surmount all difficulties."²⁴⁹ CCIR belong to the commander, and are the result of a commander-centric approach to decisionmaking. The concept of CCIR, at least in regard to decisionmaking, reinforces the idea that it is the commander's genius which determines the relevance of information.

Not all militaries rely so heavily on the commander's personal participation. German doctrine has no analogue to CCIR. The commander does not necessarily state which information requirements he considers to be critical. The staff internally manages the collection and dissemination of information, adjusting as they deem appropriate. The German system is a staff-centric one, rather than a commander-centric one. The commander still makes the decisions, but

²⁴⁵ McMaster, 62.

²⁴⁶ *FM 3-24*, ix.

²⁴⁷ *FM 6-0*, (1-1).

²⁴⁸ Van Creveld, 64.

²⁴⁹ Thomas Raphael Phillips, *Roots of Strategy: The 5 Greatest Military Classics of all Time*, (Harrisburg, PA: Stackpole Books, 1985), 427.

it is the staff which collectively frames the problem, generates acceptable solutions, and collects relevant information. Rather than depend on a commander's intuition or genius, the German system emphasizes the strength of an analytical approach.²⁵⁰

The United States, however, has always emphasized the role of the commander in making critical judgments and decisions, and continues to do so today. In a recent question and answer session, General Wallace, the Commander of the Army Training and Doctrine Command, said "we are in an environment now that is bottom-fed and commander-centric" rather than top-fed and staff-centric.²⁵¹ He observed that the nature of COIN requires even more participation from the commander, and that most important information travels "up" to the commander from subordinate units. This view is similar to Schmitt's concept of Command as top-down direction and Control as bottom-up feedback.

Since commanders are "the focal point for penetrating the fog of war, overcoming its unceasing friction, and instilling in soldiers the will to win,"²⁵² their capacity to understand, learn, and adapt is paramount to successful operations. Their personal approach to decisionmaking – and their personal limitations in dealing with complex environments – is critical to the Army C2 system. CCIR belong to the commander, and are the result of a commander-centric approach to decisionmaking.

Decisionmaking in Complex Environments

Recent research into decisionmaking confirms the value that Army C2 places on the commander. Like Napoleon and Clausewitz, today's theorists emphasize that experts rely on their experience and intuition to solve problems. In fact, despite a preoccupation with rational

²⁵⁰ COL Dieter Schmaglowski, SAMS Fellow AY 06-07. Interview at Fort Leavenworth, KS, 22 January, 2007.

²⁵¹ GEN William S. Wallace, Commanding General United States Army Training and Doctrine Command, question and answer session 29 January 2007 at the University of Foreign Military and Cultural Studies (UFMCS), Fort Leavenworth, KS.

²⁵² *FM 6-0*, (4-1).

choice decisionmaking models, commanders rarely compare multiple COAs before making their decisions. Instead, they make a “gut” decision. Intuitive decisions in complex environments have the potential to be disastrous, but true experts can – and do – make good decisions without analyzing their options. U.S. Army commanders are expected to be experts in decisionmaking.

Three recent authors have addressed decisionmaking in complex environments. In [Blink: The Power of Thinking Without Thinking](#), Malcolm Gladwell describes how people make rapid initial judgments, why they work, and why they sometimes fail. In [Sources of Power](#) and [The Power of Intuition](#), Gary Klein delves into how people make intuitive decisions and how experts can excel in uncertain or complex situations. In [The Logic of Failure](#), Dietrich Dorner explains the nature of thinking about complex problems, pointing out the good and bad habits that decisionmakers employ when faced with complexity. The first, and most obvious, lesson from each of these theorists is that experts do better than novices. Experts make better decisions because they have developed the skills and knowledge to rapidly assess a problem, recognize the pattern it represents, and come up with a solution.

Malcolm Gladwell addresses the fact that we all make immediate decisions or judgments. He notes that our intuitive judgment, which he refers to as “thin slicing”, can result in decisions “every bit as good as decisions made cautiously and deliberately.”²⁵³ He also recognizes that “we are innately suspicious of this kind of rapid cognition. We live in a world that assumes that the quality of a decision is directly related to the time and effort that went into making it.”²⁵⁴ Despite our suspicion of intuitive judgments, Gladwell makes a good case that we use them daily. However, he cautions that intuitive judgments can go wrong. They go wrong because first impressions are heavily influenced by our experiences and environment.²⁵⁵ When dealing with an unfamiliar situation, Gladwell says that our reactions are “shallow”. They are based on

²⁵³ Malcolm Gladwell, *Blink: The Power of Thinking Without Thinking*, 1st ed. (New York: Little, Brown, 2005), 14.

²⁵⁴ Gladwell, 13.

superficial observations rather than real understanding.²⁵⁶ As powerful as our rapid cognition might be, there are “subtle influences that can alter or undermine or bias the products of our unconscious.”²⁵⁷ Those influences can be controlled. Gladwell demonstrates that training, rehearsal, and experience can help individuals make better decisions.²⁵⁸ Intuition works well for those who have built up a comprehensive understanding of their subject. As a result, “the first impressions of experts are different.”²⁵⁹ Experts have a real basis for judging not only their environment, but their own reactions to it. They have developed an understanding of what information is truly relevant, and can reduce complex problems to simple elements, relationships, and patterns.²⁶⁰

Gary Klein, a long-time researcher in naturalistic decisionmaking, says that “experts see the world differently. They see things the rest of us cannot.”²⁶¹ He points out that experts perceive all sorts of things that novices miss, including “fine discriminations, patterns, alternate perspectives, [and] missing events...”²⁶² *Intuition*, as Klein defines it, is “the way we translate our experience into action. Our experience lets us recognize what is going on (making judgments) and how to react (making decisions).”²⁶³ He is quick to note that intuition is not always reliable. Intuition is not some sixth-sense or inner guide; it is a skill developed naturally through practice and observation. This skill depends on experience to “recognize key patterns that indicate the dynamics of the situation.”²⁶⁴ Decisionmakers know what cues to look for in familiar situations. If they do not see what they expect to see, they know that the circumstances

²⁵⁵ Gladwell, 97.

²⁵⁶ Gladwell, 184.

²⁵⁷ Gladwell, 252.

²⁵⁸ Gladwell, 114.

²⁵⁹ Gladwell, 179.

²⁶⁰ Gladwell, 141.

²⁶¹ Gary A. Klein, *Sources of Power: How People Make Decisions*, (Cambridge, Mass.: MIT Press, 1998), 147.

²⁶² *Ibid*, 175.

²⁶³ Gary A. Klein, *The Power of Intuition: How to Use Your Gut Feelings to Make Better Decisions at Work*, (New York: Currency/Doubleday, 2004), xiv.

²⁶⁴ Klein, *Sources of Power*, 31.

are somehow different. On the other hand, when they do see familiar cues they can confirm their judgment and select a course of action to follow. Decisionmakers are not always consciously aware of the cues that they are scanning for, but they have trained themselves to rapidly identify and interpret them for a given situation.

Dietrich Dörner, an authority on cognitive behavior and the author of The Logic of Failure, referred to intuition as “implicit knowledge”. Implicit knowledge includes experience and also underlying views or assumptions that may not exist in conscious form. A decisionmaker employing intuition may *know* that a decision is right, but might also be incapable of explaining *why* he thinks that way. This implicit knowledge is contrasted with “structural knowledge” – an explicit understanding of “how the variables in a system are related and how they influence each other.”²⁶⁵ Dörner points out that implicit knowledge is subjective. As a result, he also concludes that complexity is subjective – what seems complex to a beginner may seem simple to an expert. To demonstrate this, he compares a new driver to an experienced one. He says “the difference between these two individuals is that the experienced driver reacts to many ‘supersignals.’ For her, a traffic situation is not made up of a multitude of individual elements that must be interpreted individually... Supersignals reduce complexity, collapsing a number of features into one... We learn supersignals from experience.”²⁶⁶ Dörner’s concept of “supersignals” is essentially the same as Klein’s “cues” and Gladwell’s “thin-slicing” – an expert has developed an intuitive understanding of his field which reduces the complexity of problems. Dörner emphasizes that there is no “secret mental trick” to dealing with complex problems. Instead, he identified a number of good and bad habits which influence how well decisionmakers perform in complex situations.²⁶⁷

²⁶⁵ Dörner, 41.

²⁶⁶ Dörner, 39

²⁶⁷ Dörner, (7).

Gladwell, Klein, and Dorner have confirmed that experts can reduce complexity by recognizing underlying patterns or relationships. A true expert can understand a situation at a glance or in the blink of an eye. This is what Clausewitz referred to as *coup d'oeil*, “the quick recognition of a truth that the mind would ordinarily miss or would perceive only after long study and reflection.”²⁶⁸ Intuition is not a sixth sense or mental trick. It is built up through experience, careful observation, and study. General Patton, the brilliant WWII commander, said “for years I have been accused of indulging in snap judgments. Honestly this is not the case because... I am a profound military student and the thoughts I express... are the result of years of thought and study.”²⁶⁹ Patton trusted his instincts because he knew that they were based on a foundation of relevant experience.

Supersignals, cues, and thin-slicing – these terms describe an expert decisionmaker’s ability to recognize critical information in a particular situation. They fit some descriptions of commander’s critical information requirements. CCIR are described as “applicable only to the commander who designated them”, “situation dependent”, and “focused on predictable events or activities.”²⁷⁰ They are part of the commander’s visualization and help him to *describe* his understanding of the problem. At least in regards to intuitive decisionmaking strategies, if a commander can consciously identify the cues he is looking for, he can develop effective CCIR.

CCIR developed from a commander’s intuitive understanding do have serious limitations, however. Intuition works best in familiar situations which reveal a recognizable pattern. Commanders facing an unfamiliar problem may find their intuition misleading them. When decisionmakers fail to recognize that their experiences do not match their circumstances they make bad decisions. They make them consciously and with the conviction that they are

²⁶⁸ Carl von Clausewitz, Michael Eliot Howard, and Peter Paret, *On War*, (Princeton, N.J.: Princeton University Press, 1976), 102.

²⁶⁹ Martin Blumenson and George S. Patton, *The Patton Papers*, (Boston: Houghton Mifflin, 1972), 169.

²⁷⁰ *FM 5-0.1*, (1-21).

doing the right thing. This is what Dörner called “the logic of failure.” Addressing the same issue, Gladwell said “when our powers of rapid cognition go awry, they go awry for a very specific and consistent set of reasons.”²⁷¹ It is natural for people, both experts and apprentices, to make decisions based on intuitive rather than analytical methods. Understanding why intuition succeeds or fails is critical to making choices in complex systems.

Successful decisionmaking in complex environments relies not only on a foundation of experience, but also on certain useful characteristics or habits. Gladwell, Klein, and Dörner all identified a number of practices common to expert decisionmakers. For one thing, experts have a knack for setting and defining goals. Experts also anticipate that they will have to adapt their plans. In fact, they prepare to adjust everything, even goals, after the plan has been put into action. Finally, experts tend to have a higher tolerance for uncertainty than the rest of us, and they have developed several specific tactics for dealing with it.

Goal Setting

Expert decisionmakers have a knack for setting goals. Dörner said that “when we must deal with problems in complex systems, few things are as important as setting useful goals. If we do not formulate our goals well and understand the interactions between them, our performance will suffer.”²⁷² Dörner related a number of decisionmaking failures to poor goal setting, and pointed out that “...often we notice as we are gathering information that our goals are not formulated clearly enough to tell us precisely what information we need.”²⁷³ For a military commander, the first time he lays out his goals is when he produces his commander’s intent. Remember that the intent includes purpose, key tasks (or conditions), and end state. It is not a particular course of action; it is a broad statement of how the commander expects to get from the current state to the end state. Linked to the commander’s intent are his CCIR. They are produced

²⁷¹ Gladwell, 15.

²⁷² Dörner, 70.

at the same time and list what information the commander needs to maintain his understanding and to make decisions. If the commander fails to set clear and useful goals, his CCIR will probably be useless to both him and his staff.

Klein also addressed goal setting. He said that “to solve an ill-defined problem, we have to clarify the goal even as we are trying to achieve it, rather than keeping the goal constant.”²⁷⁴ “Clarifying” a goal after putting a plan into action means that the decisionmaker must be prepared to react to changes in his situation. He has to continually reassess his visualization and intent. In short, he has to recognize when he has selected the wrong goals and he has to be prepared to adapt.

Adaptation

Expert decisionmakers anticipate that they will have to adapt their plans, perhaps even their goals, once they put their plan into action. Klein makes it clear that “we need to be adaptive to deal with a chaotic and uncertain world. The more uncertainty we face, the more advantage there is in... building flexible plans.”²⁷⁵ Recall that two military authors – H.R. McMaster and John Schmitt – also emphasized that plans must be flexible and adaptive in complex environments. If adaptation means “modifying a plan in progress”²⁷⁶, as Klein describes it, then it would be a colossal waste of time to produce a detailed and precise plan. Many of those details, including a wide variety of *execution decisions*, would quickly become irrelevant. Instead, decisionmakers should expect to make more *adjustment decisions*.

There are significant differences between CCIR designed for *execution decisions* and those designed for *adjustment decisions*. CCIR for a detailed plan full of *execution decisions* tend to follow the rules established for PIR. They focus on specific events or activities, they support a

²⁷³ Dörner, 46.

²⁷⁴ Klein, *Sources of Power*, 146.

²⁷⁵ Klein, *The Power of Intuition*, 180.

²⁷⁶ *Ibid*, 180.

specific decision, and they are time-sensitive. As a general rule, CCIR for execution decisions support decision points and manage information. CCIR for an adaptive plan that anticipates a number of *adjustment decisions* do not follow the same rules. They focus on the cues a commander needs to recognize patterns. They may be just as valid toward the end of the operation as they were at the beginning. In terms of the purposes of CCIR, they maintain situational understanding and support assessment.

Uncertainty

Experts have a higher tolerance for uncertainty than the rest of us. This is key to decisionmaking in complex environments. Dörner's research led him to conclude that many decisionmaking failures reflect a "tendency to seek refuge in certainty and security."²⁷⁷ People who are uncomfortable with uncertainty may delegate the problem to others, focus on symptoms rather than causes, or even refuse to accept any information that doesn't match their expectations. Some may mask their uncertainty with constant action, rarely stopping to reflect on their choices or assess their progress. It is in situations like this that Army doctrine calls for an analytical approach to the problem. Gladwell also points out that a balance between deliberate and instinctive approaches is often appropriate.²⁷⁸ Moving to a more analytical decisionmaking process is certainly one response to uncertainty, but recognizing when to do so is still a decision which must be made by the commander. There are other, more natural responses.

Gary Klein, in The Power of Intuition, identified five different sources of uncertainty. They are *missing* information, *unreliable* information, *conflicting* information, *noisy* information and *confusing* information. In regard to *missing* information, he said "we can be uncertain because we are missing important information. We may not have it, or we may not be able to locate it if it is buried in an information overload. Either way, we cannot access the information

²⁷⁷ Dörner, 28.

²⁷⁸ Gladwell, 141.

when we need it.”²⁷⁹ This statement relates directly to the concept of CCIR. Based on their intent, commanders know that they will need certain information to make decisions. If the information is missing they designate it as CCIR. Klein also identified several different tactics for dealing with uncertainty. Three of his twelve tactics are relevant to a discussion of CCIR - Seeking More Information, Increasing Attention, and Building an Interpretation.²⁸⁰

Seeking more information is a natural response to uncertainty. We generally want to make decisions with as much data as possible so that we minimize our risks. Klein asserts that this response is often a waste of time, saying “there’s no point in trying to turn a good plan into a perfect one.”²⁸¹ An inexperienced decisionmaker might seek more information out of fear, hoping that a delay will result in more certainty and less risk. A skillful decisionmaker knows when it is truly necessary to wait for critical information. There are two intuitive judgments here – deciding when, specifically, a decision is required; and deciding what information is absolutely critical to that decision. This tactic relates to one of the overarching purposes of CCIR – to support decision points. When a commander knows that a decision is necessary, but is uncomfortable with the quality of available information, he can establish a CCIR to communicate his needs. The CCIR becomes a specific tasking to intelligence collectors, and is linked directly to an anticipated decision.

A second tactic for dealing with uncertainty is to increase attention. Klein points out that this is different from seeking more information because “you’re not trying to obtain any specific data... you’re monitoring an ongoing situation so you can make your move at just the right moment.”²⁸² This tactic relates to another purpose of CCIR – to support assessment. Within doctrine, assessing consists of two tasks: *monitoring* the current situation and the operation’s progress, and *evaluating* operations against measures of effectiveness and measures of

²⁷⁹ Klein, *The Power of Intuition*, 122.

²⁸⁰ Klein, *The Power of Intuition*, pp. 123-128.

²⁸¹ Klein, *The Power of Intuition*, 124.

performance.²⁸³ Assessment identifies unexpected opportunities or threats, and it helps commanders decide if an *adjustment decision* is necessary.

While CCIR have only recently been associated with assessment, the requirement to closely monitor the environment has always been part of military operations. In 1924, LTC Sweeney wrote in Military Intelligence: A New Weapon in War that “the most successful observation work is done by determining ‘normals’ and making deductions from changes in these.”²⁸⁴ More recently, LTC Joseph A. Nelson wrote in the Military Intelligence Professional Bulletin that PIR during Stability Operations “should be given the role of broad indicators that will identify when a certain element of the environment is ‘out of the norm.’”²⁸⁵ CCIR intended to support assessment are significantly different from those used to support decision points. Rather than looking for a specific event at a specific time or place, they look for changes to the status-quo which might require an intervention or some modification to the plan. Commanders use them to anticipate decisions with enough time to allow wise choices rather than hasty ones. The end result then, is that they may be looking for triggers that tell them when a decision may be required. The “triggers” appear as variances from the commander’s visualization.

A third tactic for dealing with uncertainty is building an interpretation. Klein also refers to this as “sensemaking”.²⁸⁶ Sensemaking is not about collecting information; it is about using information to explain the situation or interpret the meaning of events. It is closely related to the requirement to maintain situational understanding. Sensemaking is the process decisionmakers use to identify patterns and make “meaningful interpretations of events.”²⁸⁷ SU forms the basis of a commander’s decisions by describing the relationships among the factors of METT-TC.

²⁸² Ibid.

²⁸³ *FM 5-0.1*, (5-2).

²⁸⁴ Sweeney, 152.

²⁸⁵ Joseph A. Nelson, “Do ‘Steady State’ PIRs Work In Stability Operations and Support Operations? – Answering the Commander’s Intelligence and Decisionmaking Needs”, *Military Intelligence Professional Bulletin* Vol. 30 No. 3, July-September 2004, page 42.

²⁸⁶ In *The Power of Intuition*, Gary Klein attributes this term to Karl Weik, a researcher at the University of Michigan.

Sensemaking helps a decisionmaker check his interpretation of the current situation against his initial vision. Klein also states that “experts are not only better at forming situation awareness and seeing the big picture, but they can detect when they are starting to lose the big picture.”²⁸⁸ CCIR can represent the information a commander needs to build and maintain an interpretation – his SU. CCIR that serve this purpose may result from some event that contradicts the commander’s visualization, or which suggests that an unanticipated opportunity or threat has appeared. In other words, a commander may create a CCIR to maintain situational understanding to clarify an unexpected assessment of ongoing operations.

Note that these purposes and tactics are also related to the three information exchange modes suggested in the RAND study “Understanding Commander’s Information Needs”. CCIR to support assessment include general information that reaches the commander through the pipeline mode. CCIR to maintain situational understanding result when the commander believes his image is in need of repair, and corresponds to the tree mode of information exchange. CCIR to support decision points are linked to anticipated decisions and match the alarm mode. These three purposes of CCIR reflect how successful decisionmakers deal with uncertainty.

The Problem with Information Overload

In order to attain certainty, one must first of all have all the relevant information. The more the available information, however, the longer the time needed to process it, and the greater the danger of failing to distinguish between the relevant and the irrelevant, the important and the unimportant, the reliable and the unreliable, the true and the false. There would appear to be no way out of this self-defeating dilemma except what Napoleon calls “a superior understanding” – one based, to be sure, on training and practice, but ultimately relying no less on intuitive judgment than on rational calculation.²⁸⁹

Martin van Creveld.

²⁸⁷ Klein, *The Power of Intuition*, 134.

²⁸⁸ Klein, *Sources of Power*, 158.

²⁸⁹ Van Creveld, 267.

Since their inception, CCIR have been inextricably linked with the management of information. Influenced heavily by Herbert Simon’s “bounded rationality”²⁹⁰, researchers were convinced that technological performance had “outpaced decision making performance” and that “the human mind has cognitive limits to what it can absorb during the decision making process of combat.”²⁹¹ Army doctrine states that commanders establish CCIR to “avoid information overload”, “spare the commander from receiving irrelevant information”, and “filter” information. The underlying principle is that commanders can control the flow of information to prevent information overload by clearly stating their information requirements. The arguments for using CCIR to manage information rest on one overriding concern – the cognitive limitations of the commander. The fear of “information overload” dominated the early development of CCIR.

However, information overload can’t be defeated by providing the commander with only the information he has personally requested. Commanders need to see raw data sometimes, if only to give their intuition an opportunity to recognize patterns or trends. The ill effects of information overload can never be avoided completely, but a well-designed C2 system can reduce them. The purpose of this section is to discuss the reality of information overload, define it, and to argue that CCIR are rarely used to manage information.

Information Overload

Information overload is a well-documented issue, and it has been addressed from a number of different perspectives. Associated with the impact of modern technology, information overload is usually defined with regard to established cognitive limitations of the human mind.²⁹²

While information overload is always associated with too much information, it also has other

²⁹⁰ The term “bounded rationality” is used to designate rational choice that takes into account the cognitive limitations of both knowledge and cognitive capacity.

²⁹¹ Barefield, 2.

²⁹² Barefield, 14.

characteristics. The following paragraphs will argue that information overload is not simply a problem of too much data; it is the provision of too much *uncertain* data, in a *non-interactive* format, and in *too little time* to allow an informed decision.

Too Much Data in Too Little Time: Too much information can impair decisionmaking. Dietrich Dorner noted that too much information can “inhibit action and... increase uncertainty.”²⁹³ Malcolm Gladwell said that “... extra information is more than useless. It’s harmful. It confuses the issues.”²⁹⁴ Other authors have argued that information overload is one source of what Clausewitz referred to as the fog of war. According to this view, a commander can lose focus under stressful conditions. He “can only assimilate so many items of information before his ability to make decisions is impaired by the volume of information.”²⁹⁵ As documented earlier in this monograph, CCIR were originally intended to prevent information overload by limiting the amount of specific information presented to a commander during battle.

All of these observations have one thing in common – an underlying assumption that the decisionmaker is operating in a time-constrained environment. The problem isn’t that there is too much information, but that there is too much information arriving in a short span of time. The decisionmaker doesn’t have enough time to sort through it all and analyze it before he needs to act. Dorner, who warned against information overload, said that

“We need, of course, to do more with information than simply gather it. We need to arrange it into an overall picture, a model of the reality we are dealing with. Formless collections of data about random aspects of a situation merely add to the situation’s impenetrability and are no aid to decision making. We need a cohesive picture that lets us determine what is important and what is unimportant, what belongs together and what does not – in short, that tells us what our information *means*.”²⁹⁶

Given enough time – and good information – a decisionmaker can synthesize masses of data into a coherent understanding of his situation. Without enough time he can become

²⁹³ Dörner, 104.

²⁹⁴ Gladwell, 136.

²⁹⁵ Kellet-Forsyth, 21.

paralyzed trying to make sense from all the information he has available. The amount of data really only becomes overwhelming if a decisionmaker needs to make a rapid decision.

Information as a Source of Uncertainty: Gary Klein takes a slightly different view of information overload. While noting that novices can be overwhelmed by masses of data, he argues that experts are less likely to fall victim to it.²⁹⁷ Rather than focus on the *amount* of information, Klein focuses on its *quality*. He lists five different types of information as sources of uncertainty – missing, unreliable, conflicting, noisy and confusing. In regard to missing information, he says “previously information was missing because no one had collected it; in the future, information will be missing because no one can find it.”²⁹⁸ In other words, it has been collected and maybe even stored, but it can’t be sorted out from all the rest when the decisionmaker needs it. Unreliable information can’t be trusted, conflicting information is inconsistent with other information that you do trust, noisy information is irrelevant data that interferes with sensemaking, and confusing information seems relevant but is too complex to be interpreted. All of these sources of uncertainty can be dealt with through a variety of tactics, some of which were discussed in the previous section. While some of Klein’s tactics relate closely to other purposes of CCIR, not one of them recommends limiting the flow of information to the commander.

Information and Interaction: Information overload is certainly an issue, but it is more than just “too much” information. In a White Paper attached as an appendix to the 1997 Army Science Board Report Battlefield Visualization, Bran Ferren stated that “Information Overload within the context of Battlefield Visualization is a Myth.”²⁹⁹ According to Ferren, the problem isn’t that commanders can’t handle all the information; it’s that they get it in a non-interactive

²⁹⁶ Dörner, 44.

²⁹⁷ Klein, *The Power of Intuition*, 152.

²⁹⁸ Klein, *Sources of Power*, 279.

format. He points out that if automated systems were designed to allow the kind of rapid interaction natural to humans, the quantity of information would not be an issue. This is essentially the same point made by the RAND study “Understanding Commander’s Information Needs.” The authors did not agree with the “popular observation” that information overload was a significant problem in Army command posts.³⁰⁰ Instead, they saw it as merely a symptom of a poorly designed C2 system. Contrasting “supply-push” information systems with “demand-pull” systems, RAND argued that neither allows for a truly interactive process.³⁰¹

The RAND study concluded that all information flow in a command post has to be interactive, allowing the commander to share his intent with his subordinates and receive constant feedback from them. The feedback helps him to maintain or repair his “image”. As a result, the study determined that “the task of obtaining information is therefore not one of specifying particular needs... There should be a well-defined path for obtaining any information item that the commander or his staff might want.”³⁰² Actually using CCIR to limit information flow to the commander might prevent him from receiving unexpected or unanticipated information, and it may prevent him from receiving his information in an interactive format.

Easier Decisionmaking is Not (Necessarily) Better Decisionmaking

Addressing information overload, Dorner said “anyone who has a lot of information, thinks a lot, and by thinking increases his understanding of a situation will have not less but more trouble coming to a clear decision. To the ignorant the world looks simple. If we pretty much dispense with information gathering, it is easy for us to form a clear picture of reality and come to

²⁹⁹ Bran Ferren, “Modern Fictions: How Two Big Wrong Ideas Are Blurring the Vision of Battlefield Visualization”, contained in *Battlefield Visualization*, Army Science Board Report, December 1998, page E3. Retrieved from <http://permanent.access.gpo.gov/lps34950/bv-all.pdf> on 10 April 2007.

³⁰⁰ Worley et al., 56.

³⁰¹ In a supply-push system, the commander gets only the information “pushed” to him by his C2 system. In a demand-pull system, he gets only what he “pulls” from his system.

³⁰² Worley et al., 56.

clear decisions based on that picture.”³⁰³ He points out that simple systems produce simple problems. It is much easier to come to a decision – and be confident about it – when there is a limited amount of information available. The more information we receive, the less confident we are in our understanding and in our decisions.

Dorner is not saying that an easy decision is the same as a good one. He simply points out that it is much easier to choose a course of action when there is less data to analyze. He identified two natural responses from poor performers in complex environments. He said “we combat our uncertainty either by acting hastily on the basis of minimal information or by gathering excessive information, which inhibits action and may even increase our uncertainty.”³⁰⁴ Dorner eventually concludes that people who perform well in complex environments manage to avoid these pitfalls by recognizing when they have gathered enough information to make an acceptable decision. Intuitive decisionmaking may be natural, but there are times when an expert’s intuition can fail him. Collecting too much information is not the solution, but neither is trying to limit or ignore data.

Should CCIR Be Used to “Manage Information”?

A number of authors have addressed information overload. Most of them have recommended establishing CCIR as a means to filter, or limit, the information presented to the commander. In *Intelligence is for Commanders*, LTCs Davidson and Glass stated “the intelligence officer is in a far better position to determine the significance of information than is the commander... It is *intelligence* the commander needs – not merely information.”³⁰⁵ MAJ John Schmader said “it is imperative that the commander only receive processed information which he can use in his decision process.”³⁰⁶ MAJ Michael Barefield asserted that “commanders

³⁰³ Dörner, 98-99

³⁰⁴ Dörner, 104.

³⁰⁵ Glass and Davidson, 39.

³⁰⁶ Schmader, 49.

as a rule... do not know how to separate the information critical to mission accomplishment from the volumes of information available.”³⁰⁷ These authors, and many more, believe that the commander should be protected from irrelevant information. This tendency puts the staff in the position of “self-appointed mindguard” – a characteristic of “groupthink” first described by author Irving Janis. Mindguards “protect a leader from assault by troublesome ideas.”³⁰⁸ They prevent inappropriate information from interfering with decisions.

However, if theorists like Klein, Dorner, and Gladwell are correct, having a staff officer filter and interpret information before it reaches the commander could lead to disaster. Decision-makers in high stress environments succeed by recognizing patterns from their previous experiences. Commanders certainly don’t want to have to wade through too many facts just to come to a conclusion that should have been made by a subordinate staff officer, but limiting their information to processed estimates could prevent them from creating their own, independent vision of the battlefield. In fact, if they couldn’t recognize the difference between relevant and irrelevant information they would never be capable of creating CCIR in the first place. As one General Officer put it, “People say we will be overloaded by the incoming information. I say that’s hogwash; the problem is we ask the wrong questions.”³⁰⁹ The commander’s problem is not one of overload, but one of recognition.

The problem with using CCIR to limit the information flow to the commander is that they could separate him from the very data he needs to maintain his situational understanding and to recognize patterns. Intuitive decisionmakers need to have access to the raw data. Gary Klein explains:

“Intuition depends on our ability to notice patterns, to judge typicality, to spot anomalies, to have a feel for what is happening around us. Information

³⁰⁷ Barefield, 1.

³⁰⁸ Emory A. Griffin, *A First Look at Communication Theory*, 3rd ed. (New York: McGraw-Hill, 1997). Retrieved from <http://www.afirstlook.com/archive/groupthink.cfm?source=archther>.

³⁰⁹ Non-attribution General Officer Brief to SAMS AY 98-99, quoted in Sutherland, 34.

technology can eliminate this ability because it automatically provides us with the data and information rather than letting us work with the data ourselves.”³¹⁰

Commanders may be able to recognize the critical cues of a familiar situation, but that doesn't mean that they should be somehow protected from other available information. In fact, Klein says that decisionmakers should avoid being too specific when defining their information requirements in advance. Instead, they will learn what data is really important as they become more familiar with the situation.³¹¹ Commanders need – and often demand – the opportunity to interact with information rather than simply accept someone else's analysis. If this weren't true commanders would likely skip all of the briefings they regularly attend, and simply look over written assessments prepared by their staff. The influential RAND study “Understanding Commander's Information Needs” recognized this requirement. The three *information exchange modes* identified in the report described how the commander interacts with both the staff and information based on his level of uncertainty.

In practice CCIR establish which information is most important to the commander, but they do not prevent other information from reaching him. Even Army doctrine, which established CCIR for this purpose, anticipated that the commander would never be able to state in advance all the things he might need to know. The relevant information category *exceptional information* exists specifically to describe vital information that the commander never thought to ask for. Also in practice, commanders rarely complain that they have too much information. In fact, one study which championed the use of CCIR to prevent information overload eventually determined that “all commanders interviewed said that they lacked sufficient information to make decisions.”³¹²

Information overload is a real problem. For the purposes of this monograph it has been defined as the provision of too much *uncertain* data, in a *non-interactive* format, and in *too little*

³¹⁰ Klein, *The Power of Intuition*, 264.

³¹¹ Klein, *The Power of Intuition*, 263.

time to allow an informed decision. It must be solved through a well-designed command and control system which can “push” to the commander what he needs, while also allowing him to “pull” information when he wants it. Information overload cannot be solved through a succinct list of critical information requirements like CCIR.

Summary

This chapter introduced the Army’s approach to problem-solving and addressed COIN as an example of a Complex Adaptive System. It then discussed the implications of complexity and uncertainty on C2 doctrine, particularly for the commander-centric approach favored by the U.S. Army. It demonstrated that successful decisionmaking in complex environments relies not only on a foundation of experience, but also on certain useful characteristics or habits. There are a number of practices common to expert decisionmakers: experts have a knack for setting and defining goals; experts anticipate that they will have to adapt their plans; also, experts tend to have a higher tolerance for uncertainty, and they have developed several specific tactics for dealing with it.

Three of the four purposes of CCIR – maintain situational understanding, support decision points, and support assessment – are related to tactics employed by expert decisionmakers. They reflect how successful decisionmakers deal with uncertainty. The fourth purpose – to manage information – is intended to prevent information overload. This purpose is not supported as a valid tactic to deal with uncertainty because it prevents the commander from interacting with the very information he must see in order to recognize trends and patterns. While information overload is a real concern, it cannot be solved by using a succinct list like CCIR to limit information flow to the commander.

³¹² Kellet-Forsyth, 42.

Chapter Four: Conclusion and Recommendations

The purpose of this monograph has been to examine the concept of CCIR and determine if the doctrine is suitable for particularly complex operations like COIN. It established that COIN is an example of an ill-structured, or complex, problem. Complex problems are characterized by a high-level of uncertainty which can be dealt with through a number of different tactics. CCIR can be considered to be part of an intuitive decisionmakers response to uncertainty, and are highly suitable for use in a complex environment. However, their use is contingent on a clear and simple description of CCIR purposes, and an understanding of the difference between *execution* and *adjustment* decisions. Four recommendations resulting from this study are described below:

Army C2 Doctrine Must be Revised and Simplified

The Army can't seem to throw anything away when it comes to C2 doctrine. *FM 6-0* includes a confusing set of interrelated hierarchies and terms which are often contradictory, and generally unhelpful. These hierarchies are the result of multiple theories, studies, and ideas which have been combined haphazardly. Having started with Essential Elements of Enemy Information (EEEI) to provide the commander with information about one aspect of his tactical problem, there is now a plethora of terms and categories to describe how the Army manages information. And the list is only getting longer. The new *FM 5-0.1* adds *Situational Awareness* as an accepted doctrinal term. *Data, Information, Knowledge, Understanding, Common Operational Picture, Situational Awareness, Situational Understanding, Information Management, Information Superiority, Information Dominance, Information Systems, Relevant Information, Execution Information, COP-related Information, Exceptional Information, EEFI, IR, FFIR, PIR, CCIR* – all of these terms, and many more, are in use today. Most of these are the result of the Army's fascination with automated C2 systems. They are more suited to how computers deal with information than with how commanders do.

In some cases, current doctrine reflects partially adopted theories forced into old doctrinal frameworks. For example, after the 1989 RAND report “Understanding Commander’s Information Needs” discredited previous CACDA studies, many of its concepts were placed into doctrine with revised descriptions. Rather than accept the RAND *information exchange modes*, the Army chose to specify different categories of information. This decision mixed an interactive approach to decisionmaking with a reductionist, analytical approach designed for automated reporting procedures. By ignoring the commander’s natural decisionmaking process in favor of information management procedures, doctrine failed to adequately describe how CCIR should be developed and who should be ultimately responsible for developing them. It also led to CCIR being described as key to both a commander’s visualization and information management – two separate activities within the command and control process.

Doctrine has also been heavily influenced by theorists like Herbert Simon and Gary Klein, and by the Army’s long history of information requirements. By continually adding portions of theories to an already complex C2 system, the Army has created a system that few understand or follow. At least in regard to CCIR, commanders are effectively ignoring it to create their own practices. Some of these practices directly contradict doctrinal guidance in almost every way. Considering the central role CCIR play in the commander’s decisionmaking process, this development should signal the need for greater clarity.

Doctrine Should Clearly State the Purposes of CCIR

The purposes of CCIR are rarely stated explicitly, but there are a surprising number of intended results or effects suggested in doctrine. While broad guidance allows commanders significant latitude to establish their information requirements, it does not necessarily help them understand how to develop useful CCIR in any particular situation. This monograph introduced four general purposes for CCIR which are well supported by both their historical development and existing doctrine. Three of these purposes – maintain situational understanding, support

decision points, and support assessment – are related to tactics employed by expert decisionmakers. More specifically, they reflect how successful decisionmakers deal with uncertainty. The fourth purpose – to manage information – is intended to prevent information overload. This purpose is not supported as a valid tactic to deal with uncertainty because it prevents the commander from interacting with the very data he must see in order to recognize trends and patterns.

Doctrine Should Remove Information Management as a Purpose of CCIR

The Army should not emphasize the use of CCIR to manage information. This is counterproductive for several reasons. For one thing, according to current C2 doctrine, *Information Management* is intended to create the Common Operational Picture (COP), which forms the basis for Situational Understanding (SU), which supports decisionmaking. Saying that CCIR are intended to manage information is essentially the same as saying that they maintain situational understanding, except that the management of information is inextricably linked to automated C2 systems while SU is more closely linked to the commander's visualization.

As a function of CCIR, information management is a hold-over from the CACDA studies. The CACDA approach was analytical and reductionist because they hoped to design artificial intelligence C2 systems to present critical information to the commander. This approach also resulted in “self-appointed mindguards” who believed it was their duty to protect the commander from irrelevant information. Establishing CCIR as a means to filter information separates the commander from what he needs to maintain his situational understanding and recognize patterns. Also, as noted by historian Martin van Creveld, “present-day military forces, for all the imposing array of electronic gadgetry at their disposal, give no evidence whatsoever of being one whit more capable of dealing with the information needed for the command process

than were their predecessors a century or even a millennium ago.”³¹³ Neither superior technology, nor superior information management processes, can replace the commander’s personal involvement in the planning, preparation, and execution of an operation. While information overload is a real concern, it cannot be solved by using a succinct list like CCIR to limit information flow to the commander.

Doctrine Should Describe CCIR in Different Circumstances

Current C2 doctrine goes to great lengths to describe the differences between *execution decisions*, *adjustment decisions*, and decisions to select a COA. It also distinguishes between intuitive and analytical decisionmaking, and recognizes that decisionmaking in stability operations are different than those in conventional operations. Yet there are no instructions for how CCIR might differ in these different circumstances. Because CCIR bridge the separate areas of *command* and *control*, and also serve to *describe* the commander’s visualization, there is a valid argument that CCIR should remain essentially the same regardless of the situation. Perhaps that is true, but doctrine has essentially forced CCIR to serve different purposes in different circumstances.

When the Army chose to include PIR and FFIR as sub-categories of CCIR, it put into place an internal contradiction – CCIR are the result of the commander’s intuitive approach to a problem and also the staff’s analytical approach. The commander tends to seek information which will maintain his situational understanding and identify when he must intervene through an *adjustment decision*. Both the commander and the staff will seek information to monitor and evaluate ongoing operations. The staff tends to seek information to validate a COA or to trigger an *execution decision*. These approaches result in CCIR which are very different, both in their characteristics and their purposes. CCIR for a detailed plan full of *execution decisions* tend to follow the rules established for PIR. They focus on specific events or activities, they support a

³¹³ Van Creveld, 265.

specific decision, and they are time-sensitive. As a general rule, CCIR for execution decisions support decision points. CCIR for an adaptive plan that anticipates a number of *adjustment decisions* do not follow the same rules. They focus on the cues a commander needs to recognize patterns. They may be just as valid toward the end of the operation as they were at the beginning. In terms of the purposes of CCIR, they maintain situational understanding and they support assessment.

Regardless of the type of operation, CCIR during planning and preparation will tend to focus first on situational understanding. Commanders will look for general information to help them recognize the situation and visualize an acceptable solution. During execution, they will still need some CCIR to maintain situational understanding, but the priority will shift.

Operations in well- to medium-defined problems – conventional warfare, for example – will tend to be short duration, have less uncertainty, greater detail, and more *execution decisions*. As a result, CCIR will tend to focus primarily on supporting decision points, and then on supporting assessment. Operations in ill-defined problems – COIN, for example – will tend to be long duration, have great uncertainty, less detail, and more *adjustment decisions*. As a result, CCIR will tend to focus primarily on assessment, and then on decision points.

BIBLIOGRAPHY

- FM 2-0: Intelligence*. Washington, DC: U.S. Department of the Army, 2004.
- FM 3-19.15: Civil Disturbance Operations*. Washington, DC: U.S. Department of the Army, 2005.
- FM 3-06: Urban Operations*. Washington, DC: U.S. Department of the Army, 2005.
- FM 3-13: Information Operations: Doctrine; Tactics, Techniques, and Procedures*. Washington, DC: U.S. Department of the Army, 2003.
- FM 5-0: Army Planning and Orders Production*. Washington, DC: U.S. Dept. of the Army, 2005.
- FMI 5-0.1: The Operation Process*. Washington, DC: U.S. Dept. of the Army, 2006. *FM 6-0: Mission Command: Command and Control of Army Forces*. Washington, DC: U.S. Department of the Army, 2003.
- FM 3-07: Stability Operations and Support Operations*. Washington, DC: U.S. Department of the Army, 2002.
- FM 3-24: Counterinsurgency Operations*. Washington, DC: U.S. Department of the Army, 2006.
- FM 3-90.3: The Mounted Brigade Combat Team*. Washington, DC: U.S. Department of the Army, 2001.
- FM 31-16: Counter guerrilla Operations*. Washington, DC: U.S. Department of the Army, 1967.
- FM 34-2: Collection Management and Synchronization Planning*. Washington, DC: U.S. Department of the Army, 1994.
- Army War College, Strategic Studies Institute, and William R. Duggan. *Coup d'Oeil : Strategic Intuition in Army Planning*. Carlisle Barracks, PA: Strategic Studies Institute, U.S. Army War College, 2005.
- Axelrod, Robert M., and Michael D. Cohen. *Harnessing Complexity: Organizational Implications of a Scientific Frontier*. New York: Basic Books, 2000.
- Barefield, Michael R. "Commander's Critical Information Requirements (CCIR): Reality versus Perception." School of Advanced Military Studies, United States Army Command and General Staff College. Fort Leavenworth, KS: 1992.
- Blumenson, Martin, and George S. Patton. *The Patton Papers*. Boston: Houghton Mifflin, 1972.
- Charlton, John W. "Digitized Chaos: Is our Military Decision Making Process Ready for the Information Age?" School of Advanced Military Studies, United States Army Command and General Staff College. Fort Leavenworth, KS: 1997.
- Davidson, Phillip B. *Secrets of the Vietnam War*. Novato, CA: Presidio, 9919.
- Dörner, Dietrich. *The Logic of Failure : Why Things Go Wrong and What We Can Do to Make Them Right*. 1st American ed. New York: Metropolitan Books, 1996.
- Gladwell, Malcolm. *Blink: The Power of Thinking without Thinking*. 1st ed. New York: Little, Brown, 2005.
- Glass, Robert Rigby, and Phillip B. Davidson. *Intelligence is for Commanders*. Harrisburg, Pa.: Military Service Publishing, 1001.

- Griffin, Emory A. *A First Look at Communication Theory*. 3rd ed. New York: McGraw-Hill, 1997. Retrieved from <http://www.afirstlook.com/archive/groupthink.cfm?source=archther>
- Herbert, Paul H., and U.S. Army Command and General Staff College. Combat Studies Institute. *Deciding What Has to Be Done : General William E. DePuy and the 1976 Edition of FM 100-5, Operations*. Fort Leavenworth, Kan.: Combat Studies Institute, U.S. Army Command and General Staff College, 1988.
- Hesser, W. Andrew. *Commander's Critical Information Requirements and How to Determine Them*. Fort Lewis, Wash; 1991: Pacific Northwest Laboratory, 9899.
- Heymont, Irving. *Combat Intelligence in Modern Warfare*. 1st ed. Harrisburg, Pa.: Stackpole, 1960.
- Kellet-Forsyth, Susan P. "Commander's Critical Information Requirements: The Key to a Commander's Battle Image." School of Advanced Military Studies, United States Army Command and General Staff College. Fort Leavenworth, KS: 1993.
- Klein, Gary A. *Sources of Power: How People Make Decisions*. Cambridge, Mass.: MIT Press, 1998.
- Klein, Gary A. *The Power of Intuition: How to Use Your Gut Feelings to Make Better Decisions at Work*. New York: Currency/Doubleday, 2004.
- McChristian, Joseph A. *The Role of Military Intelligence, 1965-1967*. Washington: Dept. of the Army : For sale by the Supt. of Docs., U.S. G.P.O., 1975.
- Phillips, Thomas Raphael. *Roots of Strategy: The 5 Greatest Military Classics of all Time*. Harrisburg, PA: Stackpole Books, 1985.
- Riedel, Sharon L. "Commander's Critical Information Requirements Survey: Results (Updated Report)" Fort Leavenworth, KS: US Army Research Institute, 1984.
- Romjue, John L. "The Evolution of the Airland Battle Concept". Air University Review, May-June 1984. Retrieved from <http://www.airpower.maxwell.af.mil/airchronicles/aureview/1984/may-jun/romjue.html>.
- Schmader, John R. "Command Information Requirements on the AirLand Battlefield." School of Advanced Military Studies, United States Army Command and General Staff College. Fort Leavenworth, KS: 1985.
- Schwien, Edwin Eugene. *Combat Intelligence: Its Acquisition and Transmission*. Washington, D.C.: Infantry Journal, 1936.
- Sutherland, John R., III. "Win, Lose, or Draw: CCIR and the Commander's Role in Building Shared Vision." School of Advanced Military Studies, United States Army Command and General Staff College. Fort Leavenworth, KS: 1998.
- Sweeney, Walter Campbell. *Military Intelligence: A New Weapon in War*. New York: F.A. Stokes, 9942.
- Tank, Frank, and David L. Ward "The S2 at the Decisive Point" Center for Army Lessons Learned, CTC Bulletin 06-3. Retrieved from <https://call2.army.mil/products/ctc-bulletins/asp/06-3/ch-1.asp>.
- Townsend, Elías Carter. *Risks: The Key to Combat Intelligence*. 1st ed. Harrisburg, Pa.: Military Service Publishing, 1955.

U.S. Army Combined Arms Combat Development Activity (CACDA), "Division Commander's Critical Information Requirements (CCIR)". Fort Leavenworth, KS: 30 April 1985.

Van Creveld, Martin L. *Command in War*. Cambridge, Mass.: Harvard University Press, 1985.

von Clausewitz, Carl, Michael Eliot Howard, and Peter Paret. *On War*. Princeton, N.J.: Princeton University Press, 1976.

Worley, D. Robert, Cathleen Stasz, Rand Corporation, and James P. Kahan. "Understanding Commanders' Information Needs." Santa Monica, CA: Rand, 1989.

Glossary

AI	Area of Interest
C2	Command and Control
CACDA	Combined Arms Combat Development Activity
CAS	Complex Adaptive Systems
CCIR	Commander's Critical Information Requirements
CGSC	Command and General Staff College
COA	Course of Action
COIN	Counterinsurgency
COP	Common Operational Picture
DP	Decision Point
DSM	Decision Support Matrix
DST	Decision Support Template
EEEE	Essential Elements of Enemy Information
EEFI	Essential Elements of Friendly Information
EI	Essential Elements of Information
FFIR	Friendly Forces Information Requirements
FM	Field Manual
HPT	High Payoff Target
IM	Information Management
IO	Information Operations
IR	Information Requirement
ISR	Intelligence, Surveillance and Reconnaissance
LIC	Low Intensity Conflict
MACV	Military Assistance Command, Vietnam
MDMP	Military Decision Making Process
METT-TC	Mission, Enemy, Terrain and weather, Troops and support available, Time available, and Civil considerations
NAI	Named Area of Interest
PIR	Priority Intelligence Requirements
RDSP	Rapid Decisionmaking and Synchronization Process
RI	Relevant Information
SA	Situational Awareness
SAMS	School of Advanced Military Studies
SIR	Specific Information Requirement
SOR	Specific Orders and Requests
SU	Situational Understanding
TAI	Target Area of Interest
TRADOC	Training and Doctrine Command
TTPs	Tactics, Techniques, and Procedures