

Operational Art and its Relevance to Army Logisticians

**A Monograph
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ABSTRACT

Operational Art and its Relevance to Army Logisticians by MAJ Steven T. Mitchell, US Army, 41 pages.

The Army needs more logisticians who are operational artists and know what operational art is and how to use it. Operational art represents the cornerstone of United States Army doctrine. Its concept represents the common thread that focuses military systems towards strategic goals. Developing a common shared understanding of a military problem is essential for large planning staffs. Operational artists (including logistics planners) focus planning efforts and prevent paralysis by breaking linear paradigms and avoiding methodism. Their unique perspectives, derived from intense study of operational art, provide a catalyst that synergizes staff efforts. The School of Advanced Military Studies provides the only formal education program that produces operational artists. This program is available to CSS officers. Leveraging this program to put more logisticians who understand operational art in the field is a continuing challenge.

This monograph asserts that understanding operational art is essential for logisticians assigned as operational planners. It suggests that focused study of its construct and practiced application, to a variety of "double bind" problems, is required before the student makes the *leap* from linear paradigms to the artist's realm of the possible. This paper also asserts that graduates of SAMS are operational artists; a term that is accepted within the SAMS community but rarely enjoys recognition elsewhere. Key to supporting these assertions are definitions (still hotly debated in many circles) of operational art and the attributes (criteria) of the operational artist. The monograph focus narrows to assist the reader in developing a personal definition of operational art and then identifies some criteria essential for defining the artist. It is important to note that these *deliverables* are real and achievable. In-depth study of operational art is a necessity if operational logisticians are to significantly contribute to planning at this level. Logistics education models must not only expose officers to operational art. These models must immerse them in a detailed study of the history, structure and design of operational art prior to employment as planners at division and corps level. Formal logistics curriculum does not yet exist do this. Possessing the tool is one thing but knowing how it works and how to use it is another. SAMS is the only current source of both.

Operational art remains a gray area in the CSS officer development system. The development models fail to adequately promote the importance of operational art in creating competent operational logisticians. Although operational art remains the center of US Army and Joint doctrine and represents "how" military leaders think about peace, conflict and war; the general education system does not expose officers to its design, value and purpose. SAMS is the only formal education program available to CSS officers entering operational level plans positions that does. SAMS is relevant and currently, the only means by which logisticians can become operational artists.

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Introduction

Understanding operational art is critical to the logistics planner. Unfortunately, Combat Service Support (CSS) officer development models provide only a limited exposure to operational art. Through the first ten years of the CSS officer's career, basic, advanced and transitional courses carry a tactical focus. Although tactical grounding is essential, this generates a significant learning gap as the logistician reaches the rank of Major. Upon completion of the Command and General Staff Officer's Course (CGSOC), officers are expected to possess a wider field of view on warfighting. Field grade logisticians often enter operational planning staffs relying on previous tactical education and are expected to solve complex military problems at the operational level.¹ Without a firm grasp of operational art, the logistician's contribution as a staff planner is limited. This monograph asserts that this "cold start" condition can be remedied (in the short term) by increasing CSS emphasis on SAMS attendance.

This paper specifically focuses on operational art and the logistician. Mastery of operational art is a continuous process of study and application. This process is important for all branches, not just a select few. For example, logistics is an inseparable facet of the operational level. At this level of war, logistics becomes fluid and substantially more complex than rigid tactical structures and procedures. William W. Mendel noted: "[t]he higher you go in the levels of war, the more significant the sustainment function becomes."² Logistics planners can be caught off-guard by the magnitude of this difference, especially when faced with the complexity and scope of operational level planning, without proper grounding in operational art. The challenge, however, is the time necessary to study it and the method by which such study is accomplished.

Army development of CSS officers as operational planners is a challenging task. There are currently no formal education programs (other than those offered by the School of Advanced Military Studies {SAMS}) that sufficiently expose students to operational art allowing them to absorb, study and apply its methods to complex military problems. Although CSS advanced education programs continue to mature and contribute to professional growth, they focus on the

technical aspects of logistics at the tactical level. The operational environment is much more complex and dynamic than the tactical level. The CSS development model must recognize this difference.

Within the scope of the Army's purpose, operational art acts as a living blueprint providing "how" military leaders think about deterring war and, if deterrence fails, warfighting.³ Army officers are developed on how to deploy and employ assets within systems that meet national aims. Logisticians are no exception. Operational art embodies the essence of that responsibility. It may not be necessary to expose every logistician to intense study of operational art, as some support functions require technical expertise, but it is critical for operational logistics planners (G4/J4) who must know how to deploy and sustain forces. These positions require logisticians that can apply operational art as competently their combat arms staff counterparts. Logistics planners in such positions should be operational artists.

The CSS professional development model does not place enough emphasis on developing logisticians as operational artists. Some indicators of this include a lack of operational emphasis in key schools designed to facilitate field grade transition from tactical to operational thinking and a low SAMS application rate for CSS officers. Each of these assertions will be explored in subsequent chapters. Conversely, combat arms education models emphasize the importance of operational art because these branches understand the relevance of operational art to their environment. This monograph argues that educating logistics officers in operational art sets conditions for a shared common operational picture to develop between operators and logisticians. This will allow both operators and logisticians to work together to ensure that all tactical actors are connected to overall strategic aims. Common language, shared understanding of complex systems, and integration of collective experience can only lead to a more synchronized problem solving effort. In order to get there, the Army has to teach CSS officers about operational art and its components. It must teach them to creatively apply operational art and how its understanding enhances logistical planning.

The focus of this monograph is to answer the question: Is the School of Advanced Military Studies (SAMS) relevant to developing operational logisticians? The research proceeds from two assumptions. First, it assumes that the Army wants competent logisticians capable of applying operational art to complex problems as G4s, J4s, planners or commanders. Second, it assumes that logistics professionals, aspiring to be operational leaders, wish to make a significant positive impact on complex problem solving faced by operational staffs and commanders today.

Several definitions and relationships must be clear to definitively answer the research question. Chapter one establishes how the Army defines operational art and stresses the importance of developing a personal understanding of its essence. Chapter two describes how the operational planner synthesizes the problem environment and merges the "art" and "science" of war through operational art. It then presents some criteria for defining the operational artist. These criteria will later be used to evaluate the utility of the CSS education model and reinforce the importance of logisticians as operational artists in critical planning roles. Chapter three explores the relationship of operational art and logistics. Chapter four evaluates the current CSS education model to determine if it sets adequate conditions for the development of competent operational logisticians. It also addresses the extent to which operational art is explored in formal logistics education programs and determines if there is a shortfall. Chapter five evaluates SAMS and its potential to provide logisticians the opportunity to understand operational art. This chapter is key. It connects the value of understanding operational art to logistics planning and examines whether this concept is incorporated into CSS development models in time to exploit its value. Chapter five also evaluates the relevance of SAMS to developing operational logisticians and makes recommended changes to current or projected officer development models.

This monograph does not assert that all CSS officers need to be operational artists nor does it contend that understanding operational art can only be gained by attending specific schools. Its purpose is to focus the Army logistician on the inherent value of operational art and the unique opportunity afforded by the School of Advanced Military Studies. Operational art represents the

crucible in which military planners develop solutions to complex problems in a rapidly changing environment. Understanding how to apply operational art is as critical for division, corps and joint *logistics* planners as it is for combat arms planners (G3/J3 planners).

Chapter One

Operational Art

The quest for mastering operational art is not solely a task for the combat arms officer. The CSS planner must be equally proficient. The cognitive function of linking means, ways and ends is the very reason operational art exists. This "linking" doesn't just happen. Someone must make it happen. To grasp the value of operational art, the CSS planner must develop a personal understanding of its character and establish groundwork for assessing its relevance to logistics. This understanding is essential to linking the importance of operational art to logistics planning. This chapter presents a description of operational art (within the context of modern warfare) by capturing doctrinal definitions and background on its evolution. Overall, the chapter sets the stage to expose the synergy inherent in marriage of art and the artist. Connecting the characteristics of operational art (in this chapter) with the attributes of an operational artist (in chapter two) is necessary to frame the value of the logistics planner as an operational artist

Defining Operational Art

Operational art is the skillful employment of military forces to attain strategic and/or operational objectives within a theater through the design, organization, integration, and conduct of theater strategies, campaigns, major operations, and battles...Operational art seeks to ensure that commanders use soldiers, materiel, and time effectively to achieve strategic aims through campaign design.⁴

Establishing a universally acceptable definition of operational art is a continually debated subject. "Without operational art, war would be a set of disconnected engagements, with relative attrition the only measure of success or failure."⁶

The essence of operational art is the translation of strategic goals into achievable, tactical tasks. Theorists and military thinkers may argue over an exact definition for years to come, but operational art represents a critical, cognitive link that transforms policy into action. David L. Ward's monograph, Toward a Primer on Operational Art, noted differences between Joint and Army publications defining the elements of its design as U.S. doctrine embraced the operational

concept. He suggested these doctrinal differences still contribute to confusion, hindering common understanding of operational art among Army Officers.⁶ Despite these differences, all would argue that operational art must link tactical action to strategic aims.

Operational art is primarily used to plan the use of military forces to achieve operational/strategic objectives. The environment in which it is used can be described as the physical, moral and cybernetic domains. The physical domain contains the equipment, organizations, terrain, weather, etc., in which conflict occurs. The moral domain captures the character of men in battle and how they respond to fear. The cybernetic domain is the command and control of forces toward some objective. An operational artist must understand these domains in order to transform policy into action.

Operational art also provides a means to resolve complex problems. It is a non-linear approach to problem solving. It recognizes the complex interrelationship between the variables of time, space, combat power and purpose. This understanding allows individuals and staffs to work together and resolve complex operational problems. The object of operational art is to develop a common operational picture (COP) and synthesize interrelationships of elements to resolve complex problems. Operational art is both an individual and team concept. Synthesizing its design is an involved task that requires practice.

Despite the problems with definitions, operational art has a commonly understood purpose. The purpose, as defined in FM 100-5, OPERATIONS, is "... concentrating friendly military forces and resources against the enemy's main sources of strength...in a manner that provides...operational advantage and the initiative."⁷ Joint Pub 5.0 expands on this to say:

Operational art determines when, where and for what purpose major forces will be employed and should influence the enemy disposition before combat. It governs the deployment of those forces, their commitment to or withdrawal from battle, and the arrangement of battles and major operations to achieve operational and strategic objectives.⁸

Besides these statements of purpose, operational art also allows planners to deal with the complexity of the military operational environment. Another important factor is that operational

art derives from theory. A brief view of the evolution of operational theory is presented below and helps to frame the substance of operational art.

Emergence of Operational Art

Aleksander Andreevich Svechin was perhaps the first theorist to identify and define the relationships inherent to the operational level and the purpose of operational art.⁹ Svechin realized the need for such a concept as early as 1921 as a result of his studies of WWI. Buried by Soviet secrecy and recently recovered, he described operational art as "...the bridge between tactics and strategy..."¹⁰ Svechin also proposed that this "bridge" was defined by series of events (operations) beyond single, decisive battles, that facilitated strategic aims.¹¹

The exact moment of discovery of operational art is a hot point of debate. Some believe that the advent of modern warfare, specifically the birth of distributed maneuver, during the Napoleonic era, led to its emergence.¹² Napoleon orchestrated tactical actions toward a single aim through a corps system and a common doctrine that provided the means to conduct distributed operations.

The characteristics of operational art appeared in the United States when military leaders realized that the single, decisive battle was no longer possible and that a single battle no longer guaranteed achievement of strategic aim. Schneider postulates that the characteristics of operational art emerged during the American Civil War when General Grant employed distributed maneuver over time and space to defeat the Confederacy.¹³ In his discussion of the seven conditions necessary for operational art he exposes the holistic character of Grant's operational genius.¹⁴ Schneider wrote:

If one were to hazard a precise date as to the birth of operational art, that date would be April 4, 1864. On that date...Grant set forth a campaign design that was 'to work all parts of the [entire Federal] army together, and...toward a common center.' At a stroke Grant had exposed and rectified the main defect of the cordon system: Grant would unite all military activities east of the Mississippi into an integrated chain of distributed operations...¹⁵

One of the reasons that single decisive battles were no longer possible was because of complex logistics and the complete mobilization of belligerents. Armies backed by fully mobilized societies were much more durable. Regardless of when operational art began being practiced, it did not emerge as written U.S. doctrine until 1981 with the publication of *Airland Battle Doctrine*.

During the one hundred-year gap between Napoleon and *Airland Battle*, the characteristics of operational art were practiced in varying degrees by different armies in different wars. Only Svechin seems to have grasped the concept to the point of actually developing it into written form. Unfortunately, Soviet bureaucracy suffocated his ideas behind the iron curtain until the 1980s.¹⁶ United States military direction between WWI and WWII focused on land combat as the central theme and treated interrelationships of other forces and factors (air, sea) as complimentary contributors.

Although operational art was not codified into doctrine, there are examples of its practice in WWII. Richard Swain notes that the Vietnam War awakened military thinkers to re-look the view of conflict.¹⁷ During the Cold War, U.S. thinkers struggled with linear paradigms while opposing a Soviet enemy developing an Operational Maneuver Group (OMG)¹⁸ based doctrine that drove deep into an opponent's rear, threatening his center of gravity early in the fight. United States defensive doctrine based on trading space for time was no longer feasible in Europe because there was no space to trade. Geography precluded a strategy of space for time and the correlation of forces precluded a strategy of attrition. A non-linear approach to warfighting was essential.

Richard Swain's Filling the Void: Operational Art and the US Army, focuses on how operational art developed in the US. He points out that US efforts of the late 1970's and early 80's revolved around developing a doctrine to counter a major Soviet land offensive in Europe. As military thinkers remained paralyzed by scientific analysis, ratios, and physical relationships, the 1976 doctrine reflected only the dimensions of space and time. It leaned on Clausewitzian

precepts, with strategy and tactics joined at the hip, thus leading the Army along an analytical path to winning the land battle by attrition.¹⁹ It was a shallow, two-dimensional view.

After three iterations of doctrine review (1976-Active Defense, 1982-Airland Battle, and 1993-Battle Command), operational art represents the heart of U.S. doctrine as it conveys *how* military leaders translate policy into action. Its structure is complex in that it presents a distinct holistic framework that links strategy and tactics and depends on how various elements of the environment interact rather than analyzing isolated components.

The definition of the word *operational* gives depth to the concept of operational art.²⁰ Webster defines *operational* as "...able to function or be used..."²¹ Operational art *functions* to expose how complex problems work by focusing on the relationships between components. Shimon Naveh's book, In Pursuit of Military Excellence, brings attention to "cognitive tension," referring to the planning gap resulting from applying tactical battles, in series (or operations) over time to achieve strategic aim.²² He concluded that as a complex, open system (of systems), the operational level of war was never created. It emerged...forced into the awareness of military thought by technology and distributed maneuver as opposed to the classic strategy paradigm of the single decisive battle. It is this functional awareness that represents the *art*. He describes the purpose of this system as linking other systems, namely strategic and tactical. Operational art is a cognitive state and not a physical one. Its concept is holistic, not linear, and when applied, can make a significant impact on the environment.

The Operational Level of War

Analogies and metaphors are stacked upon end to arrive at a working definition of operational art. Edward Luttwak noted the inadequacy of the English language to articulate succinctly "...a governing concept for those activities which employ tactical events in a purposeful way to achieve the goals of strategy."²³ Throughout the ten-year struggle (1976-1986) to develop a comprehensive, flexible doctrine rooted in Clausewitzian theory, U.S. military thinkers began to realize that linking tactical action over time and space was necessary to achieve

strategic objectives, hence military thinking at the operational level of war required a more holistic approach.²⁴

Essentially, the operational level involves large unit actions, over time and space, within a theater of war. It links, through elements of operational design, strategic goals with tactical action to achieve them.²⁵

Shimon Naveh's thoughts, mentioned previously, drove deeply into the mechanics of operational theory and provided some useful attributes to aid in defining the employment of operational art.²⁶ When viewing the facets of operational art (as described in Joint Pub 3-0) it is essential to consider that each element is related to others forming an intricate network of cause and effect. The model is critical to a holistic understanding of military problems. The planner uses this model to synthesize the character of the problem and understand how it works, before applying action and resources to produce desired results. Naveh drew from Bertalanffy three parameters of cognitive tools necessary to frame the existence of complex systems; quantitative, matter, and qualitative (substantive). These parameters are useful in framing the facets of operational art. *Center of gravity, decisive points, culminating points, lines of operation, lines of communication, and forces and functions* all represent quantitative elements of the operational level. Human beings and assets, the actors in this system, represent the matter. *Termination, direct vs indirect, synergy, simultaneity and depth, leverage, balance, timing and tempo, operational reach and approach, and arranging operations* all describe the qualitative complexity inherent of the operational level. When framing the existence of an operational level, one realizes that it exists in space and time, but is significantly more complex than tactical frameworks. The unique function of operational art is that it manipulates matter, space and time toward desired political objectives on a much larger scale. Strategy provides the ends, tactics the means and operational art the ways. One level does not exist without the other.

The operational level is an environment in which matter, time, space and purpose all interrelate to produce an end. It links strategy, which provides direction, and tactics, which

energizes the means to get there. Operational art transforms strategic direction, over time and space, to set conditions necessary for successful achievement of strategic aims. Operational art functions within the operational plane and orients the planner toward recognizing that analyses does not reveal the true character of a complex problem. Synthesis, or seeing the whole, is the key.

Operational art cannot be captured on a single briefing slide or sketch, but it can be taught and applied if one understands the elements of its design, its purpose, and the value of its application. It is a cognitive function that represents "how" to view and manipulate an intricately complex system of relationships already existing within the sphere of conflict. The operational level connotes an environment that is complex, encompasses a massive array of variables and shares some of those variables with other systems. Operational art is a creative function, not a process that helps planners visualize action in such a complex environment. Its attributes free the user from linear bondage and promote creative, non-linear approaches to viewing interrelationships that characterize complex problems. Only creativity can perpetuate this effort. Operational art accepts strategic direction (ends) and strains it through the known domains of war (physical, moral and cybernetic) relative to space, time and purpose. It measures the state of matter available (means), and the terms of the environment, to create conditions for achievement of policy.

The Purpose of Operational Art

Operational art provides a shared mental model so military planners can synchronize their efforts toward a common goal. At the risk of another metaphor, each person that views an abstract painting, without the benefit of the artist being available to interpret its message, sees something different. So does the planning staff. Common, shared understanding of a problem is critical to arrive at an acceptable solution when its complex nature makes it too big for one person to discern. Interrelationships of multiple variables are key. Combat, combat support and service support functions are all integral aspects of warfighting. The operational logistician must

understand how doctrine guides these elements to work together. Understanding operational art provides the lens to focus doctrine toward a solution. Once its elements are applied, and combined with strategic guidance, efforts of military forces can be prepared and employed in time, space and purpose to create conditions for achievement of strategic goals. The answer to the problem doesn't simply pop out! One or more solutions are developed through application of operational art. These solutions represent a holistic, synergized combination of time, space, combat power and purpose that are designed to expose the enemy's strength and force his culmination. These solutions are often derived from abstract political goals/aim. They must be translated into concrete military actions. The resulting military action must establish and maintain conditions for these goals to become reality. Operational art helps the planner translate these aims into military objectives, arranging assets and action over time and space, to establishing conditions for tactical means to effect strategic aims.

Chapter Two

The Operational Artist

The previous chapter captured a mental picture of operational art. The purpose of this chapter is to describe the operational artist.

This paper asserts that operational artists exist, however, the term is often used out of context. The *operational artist* is a conversational term that one frequently hears describing someone who applies operational art proficiently. Ironically, the term is not defined, nor written, in any US Army publication or field manual. Students of operational art use it extensively, in fact quite loosely, on many occasions in numerous monographs and articles without clearly defining what an artist is. The Army leader development concept does not recognize the existence of operational artists nor does it imply that every officer master operational art. Likewise, one can assume that not every logistics officer needs to be an operational artist. However, specific duty positions require such mastery in certain roles. This paper asserts that mastery of operational art is needed for division, corps and joint, logistics planners, specifically logisticians assigned to G3/G4 or J3/J4/J5 planning staffs.

There are many historical references to military personalities that exemplify employment of operational art. Many authors tout names like Patton, Rommel, Guderian and Manstein as images of leadership that wielded such tools to produce astounding results at the operational level of war.²⁷ As early as 1927, Aleksandr Andreevich Svechin, author of *Strategy*, used the term *operational artist* as he sought to define the operational dimension and its relevance.²⁸ Originally published in Russian, and then translated in 1992, Svechin's *Strategy* presents intriguing insight into the concept of operational art long before U.S. military theorists could define its existence. What is particularly noteworthy is that Svechin realized that operational art relies upon strategic aim to set conditions for tactical results.²⁹

The term *operational artist* implies mastery of operational art. It may also connote a developed set of skills for planning at the operational level. Application of operational art must

be quantified to establish criteria for evaluation. Identifying an operational artist requires a definition. This chapter presents some criteria necessary to define the operational artist. Carl Von Clausewitz appeared to have the same problem regarding the term "Genius."³⁰ He questioned whether genius was learned or a natural occurrence. Without criteria, the idea of the operational artist remains questionable.

Defining the Operational Artist

As previously discussed, reaching a definition of the operational artist may be debated for a long time. Regardless of this tension, a start point is necessary. This monograph defines an operational artist as *one who visualizes the holistic nature of complex problems through the merging of science and operational theory of war. The operational artist discerns the essence of strategic aim, analyzes the aspects of the operational plane, develops the means by which strategic goals can be accomplished and applies finite assets over time and space to cause enemy culmination before his own.*

The operational artist translates strategic aims into military objectives and strives to create a common operational picture designed to understand interrelationships of complex variables. The artist then arranges resources over time, space and purpose to defeat enemy aims while protecting friendly centers of gravity. In order to do this, the military planner must possess a base of knowledge, and experience, that promotes creative application of the science, and theory, of war. Creativity is the catalyst that merges application of science and theory into "art." The planner must also possess personal attributes that allow application to be effective. The characteristics suggested below, discerned from a variety of sources, represent criteria that determine existence of an operational artist.³¹ One assumption must be made to continue with an attempt at such a definition. To be an operational artist, one must accept that physical perfection is not achievable and that operational art is a continuous process.

The operational artist develops plans to ensure tactical actions accomplish strategic aims. He/she must have a solid knowledge of military science and practical professional experience.

The artist must understand the complex nature of peace, conflict and war. To do all of this, an operational artist must:

- be tactically proficient and doctrinally current (an expert).
- fully understand the levels of war and the spectrum of conflict.
- be grounded in history, systems theory, complexity, and mental models that synergize (instead of dictate) the merging of science and art.
- be an expert at applying MDMP...not enslaved by it.
- absorb the construct of operational art and elements of operational design... focused on interrelationships of components.
- "extrapolate," using science and "visualize", using cognition to create a "holistic" view of the problem.

The Army's 1993 version of FM 100-5, Operations, states that the purpose of the operational planner is to determine

- What military conditions must be produced in the theater of war or operations to achieve the strategic goal?
- What sequence of actions is most likely to produce that combination?
- How should the resources of the force be applied to accomplish that sequence of actions? ³²

There is a difference between an operational planner and a planner that is an operational artist. The operational planner approaches answers to these questions via accepted analytical models. The operational artist bridges the gap between analytical thought and creativity to expand the realm of the possible. Cognitive visualization of the linkage between the physical, moral and cybernetic domains of war provides the artist with a wider range of options that affect (directly or indirectly) decisive points over time, space and purpose to reach the enemy center of gravity while protecting friendly weakness and enhancing friendly strengths.

As operational military planners struggle to assign scientific values to abstract aims, the task of applying military power to meet political goals is challenging. Two conditions are necessary. First, the planner must develop an "awareness" from the criteria listed above, and be able to visualize a problem through analysis and synthesis. This visualization must include appreciation of the tension resulting from the dilemma of applying physical resources to achieve abstract goals. This is the primary task of the operational artist. Second, commanders employing the operational artist to perform such a task, must perceive and accept that scientific analysis alone

will not reveal the tension and awareness so critical to defining the entire scope of a complex problem. Commanders must believe that the attributes the artist brings to the table are valuable, developed, and interconnected on a plane beyond the physical. A brief explanation of each characteristic of an operational artist is therefore necessary.

The operational artist is a doctrinal and tactical expert who does not simply rely on doctrine to solve problems. The artist considers more than one approach. "Doctrine addresses what characteristics operational art should exhibit.... It does not, however, provide any guidance on how to practice operational art. In other words it relies on the logic of ... 'I'll know it when I see it.'" ³³ Through Brodie's interpretation of Clausewitz, the purpose of an operational artist is to *synthesize the environment of war so that strategic aim can be accomplished within limits imposed by the means available.*³⁴ Synthesis connotes a complex thought that goes beyond analysis to realize the complex nature of relationships in conflict.³⁵ The operational artist does this by merging known scientific, historical, and doctrinal attributes with the characteristics of the problem. The artist develops a definition of the problem to be solved relative to the result desired by political aim.

The translation of abstract direction into military objectives is a difficult endeavor. Transforming this direction into a common shared understanding of the problem to be solved across the spectrum of battlefield operating systems is essential. This effort is designed to reach a clear understanding of its nature, so that application of finite assets over limited time and space can meet strategic aims. The artist realizes that the problem does not exist in stasis. It doesn't simply sit still and wait to be analyzed. It is continually acted upon by external influences thus creating a moving target. Identifying its source of power (center of gravity), and then affecting that source to friendly advantage is the cornerstone of operational art. The operational artist accepts the fact that such effects may not be possible through direct means.

The operational artist fully understands the levels of war and how U.S. doctrine visualizes the spectrum of conflict. This is only possible through focused study of the evolution of modern

warfare. Doctrine guides the artist towards consideration of "how" the environment affects application of military power to meet political aims. The levels of war define the entire range of military operations and provide a common framework for planners to coordinate their efforts. The concept of the levels of war becomes the background in which the operational artist develops a holistic image of the problem.³⁶ In the previous chapter this framework was described as a complex system of systems which creates infinite combinations of interrelationships. Grasping the fact that this environment is in constant motion is a critical step to becoming an operational artist.

The operational artist has studied historical examples of military theory application and constantly considers systems thinking, complexity, and mental models relative to military theory. The question of "what does right look like" may not ever have an answer, but analysis of "how" previous planners addressed complex problems provides valuable insight into relationships that may bear on the problem at hand. Simply revisiting historical events isn't enough. Thorough study of the perspectives of each belligerent adds definition to understanding the complex nature of conflict and helps the artist understand "why" decisions were made. It is this historical background that promotes reflection. The operational artist *reflects* on historical outcome and applies these lessons to a continually growing base that enhances the ability to solve the problem at hand.

*The operational artist sees the whole...*not simply the parts of a problem. The systems thinking aspect is an important perspective that distinguishes the artist from other planners. Peter Senge described systems thinking as a discipline for seeing wholes. He believed that humans have a tendency to focus on snapshots which blinds them to seeing the whole, and how patterns of change affect outcomes.³⁷ The ability of the operational artist to retain the holistic view results from understanding complexity as well. Systems theory enables the artist to see the environment as a complex whole and not simply the sum of its parts. Dynamic complexity³⁸ can often hide subtle cause and effect relationships over time. This may result in a planner missing patterns of

change that allow access to the enemy center of gravity because their effects occur gradually over time and become invisible. The operational artist understands dynamic complexity, as opposed to detail complexity, as the real leverage point in problem solving.³⁹

The operational artist uses mental models to better understand the environment. The artist "...is aware of both sides of mental modeling and its impacts...that it involves learning new skills...Learning must evolve...be generative...which requires leaders with reflection and inquiry skills, not just consultants and planners..."⁴⁰ The artist also challenges mental models before external circumstances compel rethinking. The artist realizes that mental models can help or hinder perception of a problem.

The operational artist has a mature, working knowledge of military science and tools available. *The artist adeptly applies the Military Decision-Making Process (MDMP) but does not become enslaved by it.* Breaking from the procedural paradigm is often necessary to appreciate "how" systems work which allows the artist to visualize the holistic nature of the problem at hand and not become paralyzed by robotic analysis.

The artist completely understands the facets of operational art and elements of operational design, realizing that interrelationships among its components are not always visible. The artist constantly reflects on these relationships as new information is available and redefines the problem as required. Simultaneously, the artist focuses on how other planners see the problem and strives to create a common, shared understanding so that planning efforts don't derail or wander in opposite directions. *The artist applies a mental model that synergizes (instead of dictates) interrelationships of science and theory.* The artist uses insight, not compliance, and focuses on seeing connections by using science as a tool to understand the relationships within elements of the problem.⁴¹

When observing military planning in its most intense environment, the operational level, one realizes that single battles with decisive outcomes rarely achieve strategic aim in such a complex setting. This environment enhances the true value of the operational artist. Planners responsible

for critical warfighting functions across the operational spectrum represent the workhorses of operational staffs. Their efforts must set the conditions for the commander to realize critical opportunities in time to enter, and remain inside of, the enemy's decision cycle to force culmination. Logistics officers bear this responsibility equally with combat arms peers. In fact, in specific staff and command positions, it is essential.

Logistics officers can be operational artists, but the opportunity to reach this pinnacle of professionalism requires early investment. It is both a personal and institutional endeavor. Only the combination of both will produce logistics operational artists that can positively impact the military effectiveness of the Army.

The operational artist uses both art and science to create solutions to planning problems. The merging of the two ideas gives body to the term and encompasses the goal of its existence. *The operational artist visualizes the essence of strategic aim, analyzes the aspects of the operational plane, develops the means by which strategic goals can be accomplished and creatively applies finite assets over time and space to cause enemy culmination before his own.*

Chapter Three

Logistics and Operational Art

Understanding the role of logistics, within the framework of the operational level, reinforces its relevance to operational art. This chapter explores the difference between tactical and operational logistics and stresses the transition necessary for planners to apply logistics principals at the operational level. . Logistics planning at this level becomes more deeply embedded in operations as a whole.⁴² Exploring the differences that set operational logistics concepts apart from tactical models is important for the CSS planner as the scope and magnitude of support expands beyond individual engagements. These differences give shape to theater design and present planners with new challenges. Fixed tactical procedures are not enough. Capturing the magnitude of logistics planning at the operational level is important to develop a firm appreciation for the necessity to break from a structured, tactical mindset and understand the fluid-like nature of operational logistics.

The Role of Logistics

The role of logistics at the operational level is "...to develop and sustain combat power while exercising operational art..."⁴³ Logistics is defined as "...the process of planning and executing the movement and sustainment of operating forces in the execution of military strategy and operations."⁴⁴ Operational logistics is an integral component of military strength as its framework bridges the gap between the national industrial base and forward deployed military forces. Logistics and operational art are inseparable and interdependent! To frame the context of operational logistics one should first briefly look at application of logistics (as a total concept) across the levels of war. FM 100-5, Operations, provides a concise description of this structure.

Strategic logistics spans the range from National Command Authority (NCA) logistics aims to theater strategic goals nested within them. "It links a nation's economic base (people, resources, and industry) to its military operations in theater."⁴⁵ The strategic-operational connection occurs at the theater level.

Operational level logistics occurs within the theater of war base and the theater of operations forward operating bases. "...[It] focuses on force reception, infrastructure development, distribution, and the management of material, movements, personnel and health services...It enables success at the tactical level of war."⁴⁶

Tactical logistics deals with established CSS functions designed to support battles and engagements. These actions are usually procedural, routine, and performed by structured organizations that man, arm, fuel, fix, sustain and protect the tactical force.⁴⁷

Logistics considerations at all levels have important qualities of their own, however, operational level logistics planning shares both tactical and strategic threads that complicate an already intricate system of support to the commander. Where tactical logistics is often concrete and measurable, operational logistics involves complex interrelationships among multiple functions that are best realized through understanding of operational art. "Operational and tactical CSS differ by the longer planning and preparation time required to support extended operations. Operational support attempts to balance current consumption with the needs of subsequent major operations."⁴⁸

A holistic approach to operational level CSS is paramount. The dimension in which operational logistics exists is a busy network of mutually supporting relationships. The three levels of logistics (previously mentioned) must blend together, creating a seamless system of support.⁴⁹ This is not a simple, unidirectional model. The neatly defined lines of support that characterize tactical logistics begin to blur at the operational level. It should be stressed here that this *blurring* maintains a clear design. Linking tactical (logistics) actions over time and space through operational ways to meet strategic aims stabilizes operational logistics design. Operational art is essential to exposing critical relationships that link these systems together. Operational logistics and operational art share common functional ground in that each focus on ensuring operations succeed.⁵⁰ Operational art explores impacts of logistics (and other systems) relative to linking strategic aims with tactical means arranged to reach them.

The combat functions that help the commander build and sustain combat power are more closely integrated at the operational level.⁵¹ All are critical to operational success but the magnitude, of these relationships, significantly increases. Here, the planner views military action over extended time and distance, where plans for single engagements are designed and sequenced to reach enemy centers of gravity. Operational level CSS (Logistics), as one of these functions, "...focuses primarily on the sustainment of the force, while the tactical-level CSS focuses primarily on the readiness of the force."⁵² Balance and mutual support, as mentioned earlier, are essential.

Logistics is an inseparable component of the operational level of war. Logistics considerations (both friendly and enemy) are interwoven into each facet of operational art and these influences cannot be removed from the operational equation. Logistics impacts on every facet of the operational art framework. Mendel suggested that application of resources is an essential element of operational design that merges with sequencing of operations at the operational level.⁵³ Antione Henry Jomini realized the importance of logistics and its relevance to operational success as he wrote: "Logistics comprises the means and arrangements which work out the plans of strategy and tactics. Strategy decides where to act; logistics brings the troops to this point."⁵⁴ Although distinction of an operational plane was not clearly indicated in his writings, Jomini's statement stressed the bond between operations and logistics.

Operational art prompts planners to think about "how" to sustain logistics momentum as it focuses on relationships and systems, instead of isolated components. The construct of logistics planning at the operational level is distinctly different from that of tactical planning. Operational logistics sets conditions for tactical action to meet strategic aims. In terms of ends, ways and means...this is its principal difference. It arranges (ways) combat power (logistics means) over time and space to accomplish strategic aims (ends). It is an indispensable link. The greatest difference exists in transitioning from specific CSS functions (Man, Arm, Fuel, Fix, Move, Sustain) to a more holistic envelopment of the characteristics of logistics (Anticipation,

Integration, Responsiveness, Improvisation and Continuity) as planners consider these over time, space and purpose. Acute awareness of the principals of logistics become critical at the operational level as the planner must synthesize many variables that impact on military problem solving.⁵⁵ Understanding operational art makes this possible.

The Relevance of Logistics to Operational Art

As logisticians negotiate the development of U.S. Army doctrine in both educational and operational mediums, one cannot deny that logistics is relevant. Ironically, the majority of doctrinal publications do not describe what "right" looks like. Doctrine represents "...fundamental principals by which military forces guide their actions in support of national objectives. Doctrine is authoritative but requires judgement in application."⁵⁶ It is the latter part of this description that makes understanding of operational art critical to the Army logistician. How logistics fits into the equation is only one part of a complex whole.

Understanding operational art is essential for the CSS planner to break from structured, tactical paradigms and significantly contribute to operational planning. Planners must incorporate operational art into an active mental model designed to address complex problem solving. The two previous chapters defined operational art and the artist. The mental model is the product of the marriage of the art and the artist. This model develops over time through focused study and experience, however, without initial education of its design...the model stands no chance of usefulness.

The construct of a mental model is cognitive in nature. Its blueprint is unique to every individual but shares a common purpose. It actively seeks input to expose dynamic relationships within the environment so that synthesis of the *parts* of a problem can reveal an image of the *whole*. A common shared understanding of the whole is the goal. Without this common operational picture, tension is never resolved and planning skews, wasting valuable time. Some components of this model are drawn from education and experience. Others are derived through creative, intuitive blending of these inputs, reprocessed by reflection and filtered through moral

sinews and values. Knowledge of operational art gives flexibility to these models and promotes creativity.

Military planners frequently find themselves unconsciously limited by established procedure which prevents creative application of an active mental model in complex problem solving. Mental models shape perceptions and influence how military planners see the world. In turn, they shape these views of the world through the theoretical lens giving the planner a unique perspective. The irresistible tendency to rely upon established analytical procedure is often the human flaw that disguises the roots of a common operational picture. Dietrich Doerner called this "...a tendency to apply overdoses of established measures...[or] mistakes of cognition."⁶⁷ This condition has many catchy descriptions such as *what to think...getting on the bus...towing the party line or paralysis by analysis*. The result is the same...failure to develop a shared understanding produces obstacles that erode *awareness* and may completely obscure the true nature of the problem.

Operational art keeps the logistician focused on the realm of the possible as opposed to linear approaches and structured analysis. Its function is to stimulate awareness of relationships so that the artist never loses sight of the whole while immersed in its parts. It calls for understanding *how to think* as opposed to *what to think*. Creative freedom must supplant the *listology* of tactical thinking.⁵⁸ Analyses of the elements of a problem do not adequately portray its nature. Relationships are key to producing the awareness that reveals the character of an environment.

This chapter has purposely oriented the reader toward some questions regarding operational art and the logistician. By capturing a definition of operational art in chapter one, and framing the attributes of the operational artist in chapter two, the reader may now appreciate the importance of logistics to operational art. More important is the logistician's role within the operational level of war. This is where the cognitive *leap* occurs. The operational plane overlaps both the strategic and the tactical. Functionally, it links them by representing the environment in

which political aims are transformed from abstract vision into military objectives, arranged over time and space, to bring physical resources to bear setting conditions for political aims to become reality. The operational planner visualizes the ends and develops ways for the commander to apply means so that abstract can become reality.

The tactical CSS officer is challenged by creative application of assets to ensure readiness of the force at all times. The focus at this level is on force readiness through all phases of a single engagement. Efforts at the tactical level multiply the combat commander's capability to focus combat power on the enemy's tactical center of gravity. The CSS planner, at the operational level, functions as an integral part of the planning process. Planners are required to understand how to interpret abstract vision and transform it into clearly definable objectives for the commander to apply resources. Here, logistics efforts orient toward sustaining conditions for tactical action to occur over extended time and space. Multiple engagements and battles, as well as support systems, must be sequenced to impact decisive points supporting enemy centers of gravity that a single tactical victory is unable to reach. Clear understanding of operational art is essential to logistics planners at this level as relationships between multiple variables imply complex arrangement of action over extended time and space.

Chapter Four

Education and Operational Art

Educating CSS officers in logistic concepts is only one facet of the Army's total effort to develop a sound professional leader base. The model enveloping CSS officer education starts with Department of the Army Pamphlet 350-58 (OCT 94), Leader Development for America's Army, as it defines the Army's overall goal: "...to develop competent, confident leaders who can exploit the full potential of present and future doctrine."⁵⁹ This statement sets the tone for the argument of this paper. The words *full potential* perhaps describes the abstract idea of why understanding operational art is so critical to division, corps and joint CSS planners. These duty positions represent the birthplace of plans and orders recommended to commanders arranging tactical assets to meet strategic aims at the operational level. This chapter argues that focused study of operational art is necessary for CSS officers assigned to these duties...hence, logistics planners need to be operational artists.

The CSS officer's career center of gravity is the ability to evolve as a competent military professional. Each distinctive career path holds unique opportunities that strengthen this center of gravity. The three pillars of the Army Leader Development Model represent decisive points relative to this center of gravity. The three pillars, in priority, are education, self-development and operational assignment.⁶⁰ Without education, self-development and assignment limit the potential for the CSS planner to evolve. Discovery, development and application, as mentioned in the introduction of this monograph, not only represent the flight path of creative logistics, but also the evolutionary nature of operational art.

Operational Art and CSS Officer Development

Within the scope of leader development, the necessity for developing logistics planners with fluent knowledge of operational art is critical. As the Army moves forward into the 21st Century, the importance of operational level CSS rises to the foreground. Logistics and operations begin

to merge into a more holistic framework at this level. TRADOC PAM 525-53, Operational Concept for Combat Service Support, states that "[t]he operational level of CSS will be the focus for the majority of general support operations on the Force XXI battlefield. The 'hub' of the battlefield distribution system will be located at this level...⁶¹ The integration of combat, combat support and service support functions at this level occurs in the planning cells of division, corps and Joint staffs. Logistics contributions must maintain graduate level quality and consider the holistic nature of any complex environment. The need for logistics planners with graduate level skills is obvious. These officers must possess a solid understanding of operational art and be skilled in *how* to think as opposed to simply regurgitating tactics, techniques and procedures.

The criteria used to identify an operational artist (from chapter two) were compared with development model requirements to evaluate its utility in setting conditions for logisticians to become operational artists. Two investigative paths were necessary. First, the author explored logistics assignments requiring application of operational art and identified criteria for officers assigned to these positions. These positions encompass field grade G3/J3/J5 and G4/J4 plans assignments on division, corps and joint level staffs. Criteria will be addressed later. Second, the study looked at the point in the development model where CSS officers were exposed to the construct of operational art so that *full potential* could be realized and exploited. In short, officers are not adequately exposed to operational art (in holistic form) during basic or advanced course tenures. The Command and General Staff Officer's Course, the Army's premier field grade transitional school, only presents a narrow exposure to operational art as a total concept. Each query was designed to reveal whether development standards meet the needs of the field by first educating CSS officers in operational art and then applying this concept through assignment where the operational artist can best serve the commander.

The Army institutional education system focuses on common denominator learning providing a CSS officer with a basic level of skills for operational assignment. This is not a bad concept,

however, some duty positions simply require more. The dilemma seems to be "when" does the logistician mentally jump from the "what to know" paradigm of the institutional learning path to the "how" before assignment as a G4, J4 planner. The answer lies in education of operational art.

The CSS Officer Development Model

As previously stated, the Army officer development model connotes three pillars of leader development: institutional, operational, and self-development. All are integrally connected. This paper focuses on institutional aspects as "...the institutional base is the foundation upon which we develop leaders to realize their maximum potential."⁶² Army Regulation 600-3, Commissioned Officer Development and Career Management (Oct 1998), outlines the development model for each branch, and functional area, and articulates institutional goals and opportunities within the model. The basic tiers of education are Common-core, Precommissioning, Officer Basic Course (OBC), Captains Career Course, Command and Staff College (CSC), and Senior Service College (SSC). This paper focuses on the CSC tier. Review of this document establishes the Command and Staff College (CSC) tier as the first level where most officers are institutionally exposed to the operational level of war.⁶³ The Command and General Staff Officer Course (CGSOC) is the institutional medium where this occurs. Thus, the career point in which the Army education system introduces the CSS officer to the operational plane is between year 11 and 14. Introduction may not be enough. To frame this argument, one should look at requirements versus education standards.

Prior to examining institutional products and standards, a review of logistics officer requirements in the field is essential. To narrow this scope, this monograph focuses on duty positions that meet specific criteria. The duty positions in question must: (1) allow assignment of a multifunctional (FA 90) CSS officer, (2) be a component of a general officer staff, and (3) require planning/execution skills commensurate with the operational level of war.⁶⁴ The most notable of these assignments include Ast G3 or G4 posts where the CSS officer becomes the

functional planner for operations or logistics, or joint level equivalent posts in J3, J5 or J4. These duty positions unquestionably require the planner to understand and apply operational art.

The CSS officer development model functions within the scope of Army officer development.⁶⁵ Educational paths cross at various points to meet CSS branch specific requirements, but the most notable point of difference occurs at the completion of Combined Logistics Officer Advanced Course (CLOAC). It is here that the CSS officer gains a working knowledge of multifunctional logistics. At the tactical level, CSS institutions (at the basic and advanced course levels) provide a solid foundation of this knowledge. Specific CSS functions and specialized career track education opportunities begin to form at this career point and may refocus the career path along functional lines.⁶⁶ The functional/multifunctional path, however, merges again when the CSS officer enters CGSOC between year 11 and 14. This is the officer's first institutional opportunity to explore combat service support as it transitions from the tactical to the operational level of war. Other advanced education opportunities are available both before and after CGSOC, but the synthesis of combined arms operations at the brigade, division and corps level (arguably tactical) occur at CGSOC. Here, exposure to joint and multinational systems begin to favor operational level emphasis and provide a broader view of CSS and its influence at the operational level. However, relative to timing and application of operational skills as a logistics staff officer, some CSS officers will graduate from CGSOC and be assigned as logistics planners at the division or corps level. Ironically, this occurs before any additional formal education in elements of operational design or operational art. It is not enough. To determine this, the author explored the "contract" educational vision statements have with commanders in the field for providing competent CSS officers to fill critical planning and staff positions.

A comparison of institutional "vision" statements, prerequisites for specific duty assignments (G4/J4 plans), and expectations of field commanders is an interesting study. The Army's

Training and Doctrine Command (TRADOC) holds the mantle of Army and branch specific institutional education. Responsibility for developing the officer operationally lies with leadership and the individual. Self-development is self-explanatory. The three pillars of officer development do not stand alone; thus relationships between them form the essence of officer development. Recognizing these relationships, and their impacts over time, is what develops the character of the CSS officer's career.

Not all logisticians need to be operational artists. As logisticians approach assignment to operational level staffs, institutional decisive points begin to emerge, prior to CGSOC, that define specific career patterns toward functional or multifunctional roles.⁶⁷ CSS officers possess basic tactical skills and advanced functional experience entering CGSOC necessary to capitalize on the "vision" of this institution which "...educates leaders in the values and practice of the profession of arms. It targets promotable captains and majors with emphasis on tactical and operational skills required for warfighting at the corps and division levels."⁶⁸

Prior to attending CGSOC, through previous institutional, operational, and self-development training, CSS officers become familiar with some facets of operational art including: *Forces and Functions, Timing and Tempo, Operational Reach and Approach, Anticipation, and Lines of Operations*. These concepts are rooted in tactical and functional experience commensurate with past assignments and training. The CGSOC student is further exposed to a tactically based curriculum that promotes practical familiarization with more facets of operational art to include: *Decisive Points, Center of Gravity, Arranging Operations, Simultaneity and Depth, and Culmination*. The merging of these, and those remaining (*Termination, Direct vs Indirect, Synergy, Balance, and Leverage*) into a holistic concept of "how" to think about warfighting, however, remains cloudy. The general and CSS specific POI provides limited exposure to interrelationships of these elements in complex military environments. Selected electives, none of which are mandatory for CSS officers, only touch upon operational art in its complete

framework. Again, this educational path is not flawed, however, the need for a mature understanding of operational art is essential for those CSS officers progressing along career routes destined to become division, corps and joint operational planners. SAMS was developed to build upon the CGSOC curriculum and open the door to a complete understanding of operational art. However, only eleven percent of the allocations (on the average) go to CSS branches.

The development model standards are tiered to meet requirements at appropriate branch and grade levels relative to operational assignment. The model identifies Military Education Level - 4 (MEL 4) CSS officers as applicable to duty assignments within division and corps level structures. It specifically notes battalion, brigade, and division logistics assignments for CSS Majors and MACOM logistics staff officer assignments for Lieutenant Colonels.⁶⁹ This document identifies these positions as key to continuing officer development along a generic career path, but does not address specific skills required to perform successfully at this level. These skills are either derived from a combination of the previously mentioned pillars of development or are expected to be present as a result of past experience.

This paper does not assert that operational and self-development phases make insignificant contributions to the preparedness of the CSS officer. On the contrary, each is extremely significant. However, given the tempo of an Army officer's career, developing attributes necessary to competently assume critical logistics planning and staff positions are a distinct hurdle.

Every commander naturally wants the best planners on the staff. Likewise, one can assume that logisticians aspiring to fully develop themselves as competent professionals at the operational level want to be equipped with the best skills to meet those needs. Operational art is the answer to each of these. Its understanding arms the CSS planner with the tools necessary to synthesize a complete awareness of complex systems and arrange logistics enablers to meet the commander's vision of setting conditions for strategic aims to become reality. At the operational level, this

initially becomes the task of the planner. Without a clear understanding of operational art, the CGSOC graduate may not be prepared to competently act as a G4 or J4 planner on a MACOM or Joint staff?

Institutional Shortfalls?

Based on a review of institutional opportunities available to the CSS officer, there are no mandatory formal education programs that comprehensively service operational art and prepare the CSS officer for specific assignment as a planner.⁷⁰ Supplementary education is necessary. There are two logical sources...self-development and SAMS.

The CSS development model implies that combination of the pillars of development adequately prepares the logistics officer for operational assignment. It posits "full potential" as the goal, yet reveals no reference to the importance of operational art, nor does it qualify any specific operational assignment as requiring additional training beyond CGSOC. Although the model addresses generic CSS professional development, operational commanders in the field may argue that educational supplement is essential. Evidence to support this assertion is represented by the intense effort to obtain SAMS graduates to fill key planner positions at divisions and corps. Intense study of operational art may not be crucial for all logisticians, but it is essential for operational logistics planners assigned to critical planning roles on division, corps and joint staffs.

Chapter Five

Operational Art and the SAMS Model

Current CSS officer development models treat SAMS as an advanced supplement to educating operational logisticians, but do not specify this program as critical for success at any level. This is a limiting approach that minimizes the potential value that SAMS brings to CSS officer development. Advanced military education, at the individual level, may be the best near term leverage point that prepares the Army for the future. As advancing technology allows military forces to do more with less, so does the need to develop leaders that can fully exploit this capability. Combat Service Support officers have a unique responsibility. They must not only adapt to maturing combat systems but also to those logistics enablers designed to enhance them. Knowledge of operational art is essential for operational logistics planners. The development challenge is the timing of education so officers can apply its benefits.

Operational art is a discipline that requires additional education, study and reflection beyond that offered by routine institutional opportunity. The face of war changes regularly. Regardless of its disguise or timing, logisticians must be fully prepared to meet these changes head on. Any opportunity to develop and hone professional skills must be considered by every CSS officer. Operational art exists to meet the challenge of conflict. It is the life-blood of the military planner. Not all leaders understand nor appreciate its priceless contribution to military application, but those that do either embrace it, or employ students of its practice. Disciples of operational art represent those truly dedicated to a profession of arms. Study and practice of operational art involves unique commitment to understanding complex systems and how U.S. Army doctrine operates within them.

The SAMS Model

The SAMS model is divided into four phases. Phases I and II occur within the Advanced Military Studies Program (AMSP). Phase III includes operational assignment of an AMSP graduate to a critical battle staff position at corps or division level. Here, learning and

development continue as the graduate synthesizes both a comprehensive formal education and actual operational experience as a planner. Phase IV is a continuing state of development that carries the graduate through joint, combined and service component assignments. Throughout all phases, development never ends.

Advanced military education is critical to developing operational logisticians. James J. Schneider blasts the lethargy of the Army institutional system in his 1995 article, What if We Fight Tonight? Through a de je vous like epithet, he appropriately frames the fluidity of the complex environment that the Army operates within today and begs the reader to question what the Army is doing *now* to prepare for an uncertain future? He argues that in light of a future

...dominated by instability and perhaps even anarchy...[t]he practical implications of such a future...entails a close examination of the very role of military education...Any military system of education worthy of the name must, therefore, produce highly competent planners. The central challenge confronting military education today is the adequate preparation of planners for the twenty-first century.⁷¹

The intent of the CSS development model struggles in parallel with combat arms models to produce competent officers capable of economically applying CSS concepts to achievement of strategic aim. The School of Advance Military Studies is the CSS officer's earliest institutional opportunity to step beyond familiarization, intently study operational art, and aggressively apply its construct to what Schneider calls the double-bind problem.⁷² Solutions to such problems require *thinking outside of the box*. It is this euphemism that affectionately describes the product of SAMS. This advanced education model was developed to project the CGSOC graduate beyond mere familiarization of operational art and to develop "...military 'diagnosticians': field and bench theorists who can disassemble the mechanism of battle and non-combat operations, examine their intricacies and ensure their proper functioning."⁷³

The Advanced Military Studies Program

The Advanced Military Studies Program (AMSP) is the first of two tiers of study designed to immerse the student in the theory of war. This focused environment presents the first institutional opportunity to fully develop the attributes of an artist discussed in chapter two. The second tier,

the Advanced Operational Art Studies Fellowship (AOASF) addresses strategic application. The combined curriculum is rooted In "...theory, history, campaign planning and exercises, and support taskings....[which] are mutually reinforcing and thus provide a penetrating outlook toward the future by melding together the theoretical, the empirical and the practical aspects of military education."⁷⁴ Not all officers are afforded the opportunity to such intense education. It is especially difficult for CSS officers. As previously mentioned, career timing, functional designation requirements and branch needs may not align to present this lucrative opportunity to every logistician; but, for the logistics planner, it is an essential step toward developing a more detailed awareness necessary in critical planning roles at the division, corps and joint level.

The centerpiece of the SAMS curricula is operational art. The mission of SAMS is "[t]o educate officers at the graduate level in military art and science to produce leaders with the mental flexibility to solve complex problems in peace, conflict, and war."⁷⁵ A review of the school's vision statement, written by COL Robin P. Swan, gets to the very core of officer development. Key to this document is the list of major expectations of AMSP graduates collected from the field. Simply put, commanders expect "...translation of education into action."⁷⁶ Quality education cannot help but to enhance quality action...hence, quality results.

The previous chapter considered the *contract* that the CSS officer development model has with the field. The SAMS contract is specific and clear; it produces operational artists.

Deliverables of this program require a graduate that:

- is tactically proficient and doctrinally current (an expert).
- fully understands the levels of war and the spectrum of conflict.
- is grounded in history, systems theory, complexity, and mental models that synergize (instead of dictate) the merging of science and theory.
- is an expert at applying MDMP...not enslaved by it.
- has absorbed the construct of operational art and elements of operational design... focused on interrelationships of its components.
- can "extrapolate," using science and "visualize", using cognition to create a "holistic" view of the problem.

Not every logistician will be an operational artist; but every operational logistics planner should be fully exposed to the study and application of operational art. The *expectations* from the field require AMSP graduates that:

- share a common basis of understanding among graduates regarding the elements of operational and tactical design.
- are capable briefers and writers, can translate commander's vision, direction, and guidance into executable plans and orders.
- can apply disciplined thought processes to tactical challenges in any operational environment.
- are adept facilitators of parallel planning processes.
- understand the language and symbols of the profession.
- can elicit cooperation among battle staff members without showcasing individual talent.
- accept responsibilities as battle staff leaders. Direct battle staff activities...Provide guidance and direction during all phases of MDMP...Ensure coordination and synchronization of plans and orders.
- possess firm understanding of FM 100-5, and corps and division doctrine. Are not doctrinal 'Jesuits' but can apply doctrinal or non-doctrinal solutions...
- understand the capabilities and limitations of extant technology. Can apply innovative solutions to technological challenges associated with MDMP and mission execution.
- are tireless planners...⁷⁷

The above characteristics of an operational artist reflect expectations captured by the SAMS vision statement. These qualities, carried to the field by SAMS graduates, represent an advanced military education that builds upon Army, and branch specific development models. The contract invoked by the SAMS model is a solid one that field commanders count on. The deliverables are clear. Evidence supporting this is represented by the importance field commanders place on SAMS graduate distribution and the types of jobs they are recruited for. "SAMS-educated officers are operational artists."⁷⁸

A significant educational issue remains. Where, and when, in the officer development process should the Army expose CSS officers to "graduate" level concepts that set conditions for understanding the full spectrum of operations?⁷⁹ Operational art in its entirety is only taught at SAMS. The answer remains an individual effort and is only briefly mentioned within the construct of the CSS officer development model. The CSS community realizes the need for advanced military education as sorely as sister branches, but CSS officers applying to SAMS are

still a minority. The answer may lie in modifying the development model, however, this is material for an entirely different monograph. Realizing the value of advanced military education, and application of its products, is the first step. Leveraging this advantage will produce positive results. Sustaining the efforts of the SAMS program and sharing its evolutionary contribution to understanding, and applying operational art, will benefit both institutional and operational pillars of development across the spectrum of officer education. The CSS community should actively promote SAMS attendance.

The SAMS Model Goes Beyond Institutional Learning

SAMS is relevant to developing operational artists; in fact it is the first formal education program available dedicated to focused study of operational art. SAMS produces *operational artists*. Eventually, the Army at large may accept the term "operational artist" to represent officers that are SAMS graduates, but all must realize that merely completing the curricula is only the beginning.

The SAMS model continually challenges the artist to expand the realm of the possible through a living mental model that breaks the shackles of "what to think" and stimulates "how to think" about peace, conflict and war. Upon entering Phase IV of the model,

AMSP and AOASF graduates--

- understand and can practice operational art, and understand that the operational level of war and practice of the operational art links strategic vision to tactical action; operational art is therefore inextricably linked to campaign planning.
- understand the implications of joint doctrine as it relates to campaign planning. Able to take a top-down approach to joint planning.
- possess a common understanding of the elements of operational design and the use of these elements in the campaign planning process regardless of operational environment.
- understand the roles, relationships and capabilities of service components within a joint or combined operational environment. Have a refined understanding of how their own service components work.
- understand and can conduct deliberate and crisis-action planning within the JOPES framework.
- can conduct parallel campaign and major operations planning processes within joint, combined, and interagency frameworks.
- understand the implications of joint, combined and interagency command and control relationships.

- understand the capabilities and limitations of extant technology. Can apply innovative solutions to technological challenges associated with the MDMP and mission execution at the operational and theater-strategic levels of war.
- understand how to integrate MDMP processes with distributed organizations within joint, combined and interagency frameworks.⁸⁰

The unique personality and curricula of SAMS currently limits its ability to take on a large student body. Its intense focus on a "...pedagogical method that stresses the development of the military mind in the art and science of warfare..."⁸¹ requires careful management so as to maintain promulgation of operational art. It is not a doctrinal elitist society open only to the select few. It is the Army's crowning achievement to advanced military education.

The SAMS program is a component of the Army officer development model. It is arguably an obscure facet of the CSS officer development model; however, the by-product of this program represents the center of gravity of the development of the officer corps and U.S. doctrine. The issue at hand is to leverage what is available as the Army develops new methods to enhance its relevance for the future. Likewise, advanced attention should be paid to the SAMS' contribution to CSS in today's operational environment. Increasing its significance within the CSS officer development model and early identification of potential attendance should be the first point of change.

Conclusion

The development of today's Combat Service Support Officer is a complex process. Each branch has its own character and personality, yet, there is a common thread connecting all CSS development models. The neatly packaged career goals depicted in each branch development model identify minimum standards for career progression to occur. Although the goals represent adequate guide-points for the CSS officer population at large, they fail to differentiate between general assignment and conditions necessary to perform specific logistics duties at the operational level. The focus of this study was oriented on those duties that employed logisticians required to plan at the operational level. The positions discussed in this monograph (division, corps and joint logistics plans assignments) represent the heart of the CSS operational process. Without such plans, execution will not maximize the logistics potential available to the operational commander.

Commanders expect logistics planners assigned to division, corps and joint plans cells to be operational artists. The tools required to perform at this level must be taught and developed through careful study and application. The Army education system presents limited (but attainable) opportunities to develop operational planning skills, however, CSS officer development models inadequately promote institutional programs that presents them (i.e. SAMS). Understanding operational art is essential for the operational CSS planner to contribute to staff efforts solving today's complex military problems. Operational art is not a scripted process nor is it taught in general education forums like advanced courses or CGSOC. David L. Ward concluded that:

Operational art is not a subject which can be reduced to a sequential checklist that guarantees a product at the end in a manner similar to the military decision making process (MDMP). It is definitely an art. It is also not easy. Moreover, like all art, there is a science or craftsman portion which must be mastered before one can be an artist.⁸²

Ward's observations clearly insinuate that only those who have studied the character of operational art, and mastered its construct, can skillfully employ its function. The operational artist is developed, not born...education is the first step.

Once afforded the opportunity of study, students of operational art must merge perception of the cybernetic, moral and physical domains of conflict into a mental model that promotes a unique view of complex interrelationships of variables that influence peace, conflict or war. This education, combined with innate creativity sets conditions for operational *artists* to emerge. Commanders of corps and divisions actively seek artists to superimpose operational art onto complex military problems and develop innovative solutions. Both commanders and subordinate staffs hold the deliverables, expected of the operational artist, in high regard. The CSS officer is no exception; in fact, it may be more difficult for the logistician to become an artist.

Over half of the CSS officer's career, and more than two thirds of formal education, occur within the tactical realm of influence. A majority of formal education (up to CGSOC) familiarizes the logistician with combined arms concepts while orienting on logistics contributions. This limited exposure to the interrelationships of the facets of operational art does not adequately prepare CSS officers for assignment as planners at the operational level, where operations and logistics become intricately intertwined. At some point, a need to develop operational artists should be clearly identified by branch managers, and development models, so that field commanders may count on their employment early enough to capitalize on the potential of operational art.

Operational art is relevant to operational logistics. Operational art is essential to exposing critical relationships that link complex systems together. Operational artists exist and the Army currently has a means to train more. Although this capability is limited, leveraging SAMS to continue to seed the field with operational artists of all branches is essential. Colonel L. D. Holder sounded the alarm early (1990) when he stated:

'We need operational-level staff officers immediately. The question remains, how does one become a practicing operational artist quickly? We are currently in serious short supply. Our generals and Admirals grew up in the service while operational art education was absent. However, it is likely that their independent study contributed to their ascent to flag rank. We need many more practitioners in command and staff jobs in the grades of major through general, and we need them now! The current dearth of operational artists may represent the United States' weak decisive point to the enemy.'⁸³

The field still needs operational artists immediately. Although the population has grown, field commands still struggle to capture SAMS graduates and employ their unique skills in critical planning roles. The CSS graduate of SAMS remains a hot commodity. SAMS tier one distribution battles wage each year as corps and division commanders energetically struggle to obtain operational artists. More are necessary. Operational logisticians can be operational artists, in fact they are preferred for critical positions on operational planning staffs. The School of Advanced Military Studies is the only formal Army education program that produces operational artists; hence, SAMS is relevant to developing operational logisticians.

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¹ DOD Terms JMTGM-024-97 NATO, (1997) Terms Selected Acronyms and Abbreviations.

"operational level of war--(DOD) The level of war at which campaigns and major operations are planned, conducted, and sustained to accomplish strategic objectives within theaters or areas of operations. Activities at this level link tactics and strategy by establishing operational objectives needed to accomplish the strategic objectives, sequencing events to achieve the operational objectives, initiating actions, and applying resources to bring about and sustain these events. These activities imply a broader dimension of time or space than do tactics; they ensure the logistic and administrative support of tactical forces, and provide the means by which tactical successes are exploited to achieve strategic objectives."

² William W. Mendel, (1991), *The Campaign Planning Process*, quoted in *SAMS Readings AMSP Course 3, Campaign Planning*, Command and General Staff College, School of Advanced Military Studies, Ft Leavenworth, KS (1991), pg 13

³ Headquarters, Department of the Army, FM 100-5, *Operations*, (Washington DC, 14 June 1993), pg 1-1. The purpose of the Army: "The United States Army exists to support and defend the Constitution of the United States. It does that by deterring war and, if deterrence fails, by providing Army forces capable of achieving decisive victory as part of a joint team on the battlefield-anywhere in the world and under virtually any conditions..."

⁴ Department of the Army, FM 100-5, *Operations*, (June 1993), pg. 6-2

⁵ Department of the Army, US Army Joint Staff, (1997), Joint Force Employment Briefings, JFC CD-ROM, Vol 1. No 1. March 1997

⁶ David L. Ward, *Toward a Primer on Operational Art*, School of Advanced Military Studies/ Monographs 1999. "The 1993 version of FM 100-5 advertises itself as concentrating on the operational level of war. It defines several terms that are used in operational art, but inadequately explains how they relate to one another. The terms and definitions contained in the 1993 version of FM 100-5 do not match the definitions and terms of the characteristics of operational art included in Joint Publication 3.0 Doctrine for Joint Operations published in 1995. These gaps and disconnects in understanding have often led to confusion and hindered the intellectual development of the field grade officer in the US Army."

⁷ Department of the Army, FM 100-5, *Operations*, (June 1993), pg. Glossary-6; and Department of the Army, FM 100-7, *Decisive Force: The Army in Theater Operations*, (May 1995), pg 3-0.

⁸ Department of the Army, Joint Pub 5-0, *Doctrine for Planning Joint Operations*, (13 April, 1995) pg. 1-2

⁹ Aleksander Andreevich Svechin, *Strategy*, A translation of *Strategiia*. Moscow: Voennyi vestnik, 1927. East View Publications, Inc 1991, pg. 38. He wrote: "...politics shaped strategy in all its dimensions, strategy set the parameters of operational art, and operational art shaped tactics to the demands of the theater campaign."

¹⁰ *ibid*, pg. 38

¹¹ Aleksander Andreevich Svechin, *Strategiia*, 1st Edition, pp. 18 as quoted in ,*Strategy*, A translation of *Strategiia*. Moscow: Voennyi vestnik, 1927. East View Publications, Inc 1991, pg. 38. He states: "We define an operation as an act of war in the course of which, without any pauses, the efforts of the forces in a particular area ...are directed toward the achievement of a specific, intermediary goal."

¹² Robert M. Epstein, (2 NOV, 1992), *Napoleon's Last Victory: 1809 and the Emergence of Modern War*, SAMS Readings, Command and General Staff College, Leavenworth KS, pp. 263-286.

¹³ James L. Schneider, (16 June 1991), *Vulcan's Anvil: The American Civil War and the Emergence of Operational Art*, Theoretical Paper No-4, Command and General Staff College, Leavenworth KS

¹⁴ *ibid*, pg 44 and 65-67. Synopsis of Schneider's seven conditions: "weapon lethality...continuous logistics...signals technology...operationally durable formations...operational vision...operationally minded enemy...national capacity to wage distributed war..."

¹⁵ U.S. Grant, "Report to the Secretary of War on Operations, March 1864-May 1865," July 22, 1865, O.R. ser. I, vol. XLVI, pt. 1, no. 1, p. 11. As quoted in: James L. Schneider, (16 June 1991), *Vulcan's Anvil: The American Civil War and the Emergence of Operational Art*, Theoretical Paper No-4, Command and General Staff College, Leavenworth KS, pp. 42-43.

¹⁶ Aleksander Andreevich Svechin, *Strategiia*, 1st Edition, pp. 18 as quoted in ,*Strategy*, A translation of *Strategiia*. Moscow: Voennyi vestnik, 1927. East View Publications, Inc 1991

¹⁷ Richard L. Swain, *Filling the Void: The Operational Art and the U.S. Army*, (Ft Leavenworth, KS: CGSOC [AMSP] date unknown), pp. 3-9

¹⁸ US ARMY, FM 100-61, ARMOR- AND MECHANIZED-BASED OPPOSING FORCE OPERATIONAL ART, 26 Jan 1998, Leavenworth, KS, Chapter 4... "The basic concept of the OMG is to fracture the stability of the enemy defense at the earliest possible moment by conducting deep operational maneuver into the enemy's rear area. Once in the enemy rear, the OMG's main purpose is to help smooth and accelerate the progress of the main force by eroding the defense from within."

¹⁹ Department of the Army, FM 100-5, *Operations* (1 July 1976), quoted in Richard L. Swain, *Filling the Void: The Operational Art and the U.S. Army*, (Ft Leavenworth, KS: CGSOC [AMSP] date unknown), 3.

²⁰ L. von Bertalanffy, *General System Theory* (New York, 1975), quoted in Shimon L. Naveh, *In Pursuit of Military Excellence*, (Frank Cass Publishers, London, 1997), 4

²¹ Webster's Universal College Dictionary, Random House, Inc, (New York, 1997)

²² Shimon L. Naveh, *In Pursuit of Military Excellence*, Frank (Cass Publishers, London, 1997), pg 65n...here he footnotes (57) his definition of cognitive tension while discussing Clausewitz's preclusion of the link between strategic aim and the means applied to reach it. He defined tension as "...the universal dynamism that results from the inevitable tension between the tactical objective, which orients the fighting formations at any level, and the operational, or strategic aim, which directs the system as a whole."

²³ Richard L. Swain, *Filling the Void: The Operational Art and the U.S. Army*, (Ft Leavenworth, KS: CGSOC [AMSP] date unknown), pg. 34

²⁴ *ibid* pg. 35. "...that the real artistry of war took place someplace on a plain of action above the winning of a single battle. That battle was a means, not an end in war. That there was a dimension of action outside the practical experience of most officers, which might have its own logic and grammar, and it might be mastered by study and reflection...The leading characteristics of actions at the Operational Level were...[maneuver]...through the conduct of campaigns, that comprehended a theater of operations...."

²⁵ Shimon L. Naveh, *In Pursuit of Military Excellence*, Frank (Cass Publishers, London, 1997)

²⁶ *ibid*.

²⁷ Richard L. Swain, *Filling the Void: The Operational Art and the U.S. Army*, (Ft Leavenworth, KS: CGSOC [AMSP] date unknown), 40.

²⁸ Aleksander Andreevich Svechin, *Strategy, A translation of Strategiia*. Moscow: Voennyi vestnik, 1927. East View Publications, Inc 1991, 73. "Strategy is the art of military leaders, primarily the art of those persons called on to resolve the basic problems set forth by a wartime situation and to transmit their strategic decisions for execution by operational artists."

²⁹ *ibid.*, 73. "Any time an operational artist must make a choice between two alternatives he will be unable to justify a particular operational method if he stays solely within the realm of operational art, and he will have to rise to a strategic level of thinking."

³⁰ Carl Von Clausewitz, *On War*, Indexed edition, Edited and translated by Michael Howard and Peter Paret...with a commentary by Bernard Brodie, Princeton University Press, Princeton, New Jersey, 1984

³¹ David L. Ward, *Toward a Primer on Operational Art*, School of Advanced Military Studies/ Monograph (1999) discusses how education might be applied to develop operational artists. Darfus L. Johnson, Monograph: *Center of Gravity*, *The Source of Operational Ambiguity And Linear Thinking in the Age of Complexity*, School of Advanced Military Studies, (1999) explores a balance between technological capabilities and operational doctrine relative to the operational artist. Quirk, *The Artist's Approach to Military Decision-Making at the Operational Level*, School of Advanced Military Studies, Monographs, (1986) discusses the tools necessary to recognize the value of operational art and for one to become an operational artist. Brooks, *Knowledge is the Key: Educating Training and Developing Operational Artists for the 21st Century*, School of Advanced Military Studies, Monograph (1992) discusses outputs of education systems education systems output...SAMS specific.

³² Department of the Army, FM 100-5, *Operations* (May 1986), quoted in Richard L. Swain, *Filling the Void: The Operational Art and the U.S. Army*, (Ft Leavenworth, KS: CGSOC [AMSP] date unknown), 41.

³³ David L. Ward, *Toward a Primer on Operational Art*, School of Advanced Military Studies, Monographs (1999).

³⁴ Carl Von Clausewitz, *On War*, Indexed edition, Edited and translated by Michael Howard and Peter Paret...with a commentary by Bernard Brodie, Princeton University Press, Princeton, New Jersey, 1984, pg. 642. "The object of war, Clausewitz says in a three tiered statement, is (a) to impose our will on the enemy, to do which (b) we use the means of maximum available force, with (c) the aim of rendering him powerless. We thus note at the outset the distinction between military aim and political object...he also

touches insightfully on the part played in war by passion, which inevitably distorts the clear conception of the object." 642-643.

³⁵ Webster's Universal College Dictionary, Random House, Inc. (New York, 1997). Webster defines synthesis as "...the combining of the constituent elements of separate material or abstract entities into a single or unified entity (opposed to analysis)...a complex whole formed by combining."

³⁶ Department of the Army, FM 100-5, *Operations*, (June 1993), 1-3.

³⁷ Peter M. Senge, *The Fifth Discipline*, New York: Doubleday, October 1994, pp. ix-135. Systems thinking " ... is a framework for seeing interrelationships rather than things, for seeing patterns of change rather than static snapshots. It is a set of general principals-distilled over...[time]...a specific set of tools and techniques originating in two threads: in feedback concepts of cybernetics and in servo-mechanism engineering theory..." 68.

³⁸ Ibid., 71, Senge says dynamic complexity occurs in situations where cause and effect are subtle and where the effects over time of interventions are not obvious.

³⁹ Ibid., 71-72, Senge says detail complexity implies a series of influences (many variables) on the problem in the form of individual variables that when isolated...can be manipulated to reach a solution addressing the whole.

⁴⁰ Ibid., 187.

⁴¹ M. Mitchell Waldrop, *Complexity, The emerging Science at the Edge of Order and Chaos*, M. Waldrop, New York, (1992), 21.

⁴² Department of the Army, FM 100-16, *Army Operational Support*, (Washington DC, May 1995), v.

⁴³ Ibid., v.

⁴⁴ Ibid., v.

⁴⁵ Department of the Army, FM 100-5, *Operations*, (Washington DC, June 1993), 12-2. ...[Strategic logistics] deals with mobilization, acquisition, projecting forces, strategic mobility, and the strategic concentration of logistics in the theater base and the COMMZ."

⁴⁶ Ibid., 12-2 and 12-3

⁴⁷ Ibid., 12-3. "The focus at the tactical level is manning and arming tactical units, fixing and fueling their equipment, moving soldiers, equipment and supplies, and sustaining soldiers and their systems."

⁴⁸ Department of the Army, FM 100-16, *Army Operational Support*, (Washington DC, May 1995), 3-7.

⁴⁹ Ibid., 3-8. A useful diagram is depicted here that captures the mental image of how the levels of logistics merge.

⁵⁰ Department of the Army, FM 100-5, *Operations*, (Washington DC, June 1993), 12-2. . "The focus of operational logistics is to ensure that operations succeed."

⁵¹ Ibid., 2-12. The combat functions are Intelligence, Maneuver, Fire Support, Air Defense, Mobility and Survivability, Logistics, and Battle Command.

⁵² Department of the Army, FM 100-16, *Army Operational Support*, (Washington DC, May 1995), 3-1

⁵³ William W. Mendel, *The Campaign Planning Process*, as quoted in *SAMS Readings AMSP Course 3* (Ft Leavenworth, KS 1991), 11.

⁵⁴ Antione Henry Jomini, *Precis de l' Art de la Guerre* (1838), as quoted in Department of the Army Joint Pub 4-0, *Doctrine for Logistics Support of Joint Operations* (Washington DC, 27 JAN 95), II-4.

⁵⁵ Department of the Army Joint Pub 4-0, *Doctrine for Logistics Support of Joint Operations* (Washington DC, 27 JAN 95), figure II-1. Principals of Logistics: Responsiveness, Simplicity, Survivability, Flexibility, Sustainability, Economy, and Attainability.

⁵⁶ Department of the Army, FM 100-5, *Operations*, (Washington DC, June 1993), Glossary-3 (Definition of doctrine).

⁵⁷ Dietrich Doerner, *The logic of Failure*, (Metropolitan Books, Henry Holt and Company, New York, 1996), 33.

⁵⁸ Author's colloquialism to describe lists of tactics, techniques and procedures referred to by tactical planners that have worked in the past under similar circumstances. The point here is that lists of previously successful solutions may not define the true nature of the current problem.

⁵⁹ Headquarters, Department of the Army, DA Pamphlet 350-58, *Leader Development for America's Army* (13 Oct 1994), Washington D.C

⁶⁰ Ibid., Author's opinion added regarding priority" ...as education provides the foundation for development to occur."

⁶¹ Headquarters, Department of the Army, TRADOC Pamphlet 525-53, Operational Concept Combat Service Support, 1 April 1997, para 3-3.c.2

⁶² Headquarters, Department of the Army, DA Pamphlet 350-58, *Leader Development for America's Army* (Washington DC, 13 Oct 1994)

⁶³ Headquarters, Department of the Army, AR 600-3, *Commissioned Officer Development and Career Management* (Washington DC, Oct 1998), ... It should also be noted here that the Command and General staff College consists of CAS3, CGSOC, AMSP, SCS, AOASF and a myriad of other developmental institutions serving TRADOC commitments to leader development.

⁶⁴ Ibid.

⁶⁵ A complete framework of branch specific development models are each depicted in AR 600-3, a logistics officer development model is extrapolated from these individual models.

⁶⁶ Author's note: Both single track, and multifunctional CSS officers are subject to specialization but those that are assigned to plans positions require indepth study of operational art.

⁶⁷ Headquarters, Department of the Army, AR 600-3, *Commissioned Officer Development and Career Management* (Washington DC, Oct 1998).

⁶⁸ Department of the Army, Command and General Staff College web page, <http://www-CGSC.army.mil>.

⁶⁹ Headquarters, Department of the Army, DA Pamphlet 600-3, *Commissioned Officer Development and Career Management* (Oct 1998), Washington DC. 28.2.1

⁷⁰ United States Army, Office of The Quartermaster General, Officer Proponency, *Officer's Professional Development Pamphlet, 600-3 Extract*, Chapter 3, <http://www.lee.army.mil/quartermaster/oqmg/officerprop/qmdevlp0.html>, 1998 depicts the QM officer professional development model and associated career paths. United States Army, Office of the Chief of Transportation, Officer Proponency, <http://www.eustis.army.mil/OCOT/opd.html> depicts the TC officer professional development model and associated career paths. Ordinance, Medical Service, Adjutant General and Finance Corps models are contained within Headquarters, Department of the Army, AR 600-3, *Commissioned Officer Development and Career Management* (Washington DC, Oct 1998) (respective branch chapters).

⁷¹ James J. Schneider, (1995), *What if We Fight tonight, Advanced Military Education for the XXIst Century*, Association of Advanced Operational Studies NET CALL, Volume II, Number 2 Fall-Winter 1994-95, SAMS/USACGSC, Fort Leavenworth, KS

⁷² Morris Berman, *The Reenchantment of the World* (New York: Bantam Books, May 1984), pp. 225-29. As quoted in: James J. Schneider, (1995), *What if We Fight tonight, Advanced Military Education for the XXIst Century*, Association of Advanced Operational Studies NET CALL, Volume II, Number 2 Fall-Winter 1994-95, SAMS/USACGSC, Fort Leavenworth, KS:

This class of problems, the most difficult and also the most common of military problems, are called double-bind problems. Double-bind problems have the following structure:

- (1) In trying to accomplish your mission, you cannot do A.
- (2) You must do B.
- (3) In reality you cannot not do A and you cannot do B.
- (4) You are largely unaware of rules (i), (ii), (iii) because they are hidden in the problem itself.
- (5) You cannot discuss the existence or nonexistence of rules (I), (ii), (iii), because they are not self-evident.

⁷³ James J. Schneider, (1995), *What if We Fight tonight, Advanced Military Education for the XXIst Century*, Association of Advanced Operational Studies NET CALL, Volume II, Number 2 Fall-Winter 1994-95, pg. 7, SAMS/USACGSC, Fort Leavenworth, KS

⁷⁴ *ibid.*, 7.

⁷⁵ US Army Command and General Staff College, School of Advanced Military Studies (Web Page), Mission Statement, <http://www-cgsc.army.mil/sams/index.htm>.

⁷⁶ COL Robin P. Swan, Director, School of Advanced Military Studies, Vision Statement (1998)...SAMS Web Page, <http://www-CGSC.army.mil>, 3.

⁷⁷ *ibid.*, 3.

⁷⁸ *Ibid.*, 4.

⁷⁹ LTG Tommy Franks, Cdr, 3rd US Army, Speech to SAMS students, 7 OCT 99, Ft Leavenworth, KS

⁸⁰ COL Robin P. Swan, Director, School of Advanced Military Studies, Vision Statement (1998)...SAMS Web Page, <http://www-CGSC.army.mil>, 4.

⁸¹ *ibid.*, 1

⁸² David L. Ward, Toward a Primer on Operational Art, School of Advanced Military Studies, Monographs 1999, 8.

⁸³ COL L. D. Holder, quoted by Lieutenant Colonel Scott A. Marcy, US Army, *Operational Art Getting Started*, Military Review, VOL LXX, NO. 09 -- September 1990